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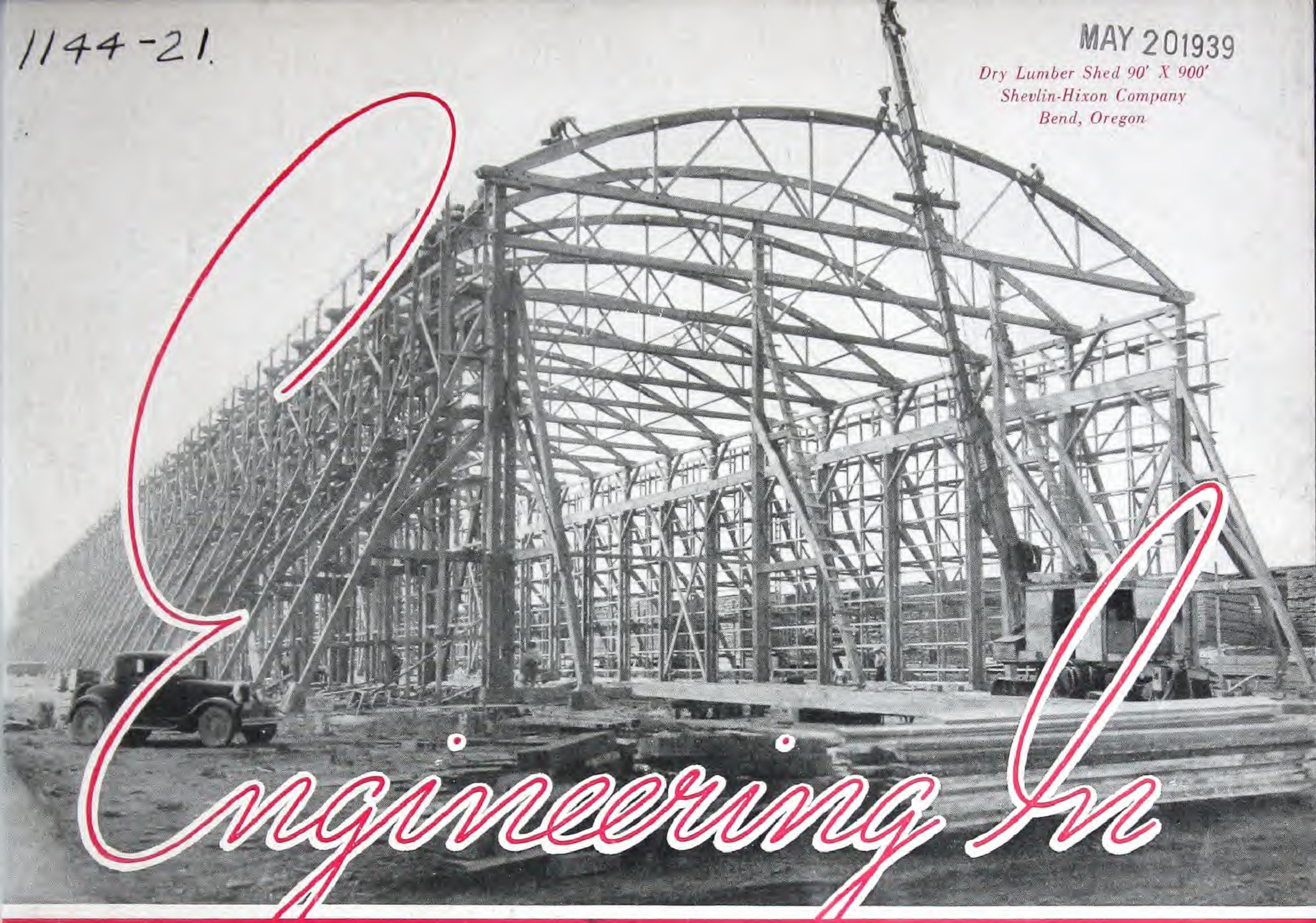


Dry Lumber Shed 90' X 900'
Shevlin-Hixon Company
Bend, Oregon

Engineering In

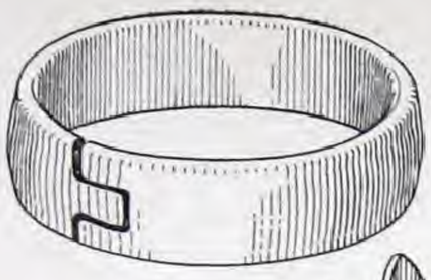
TIMBER

★

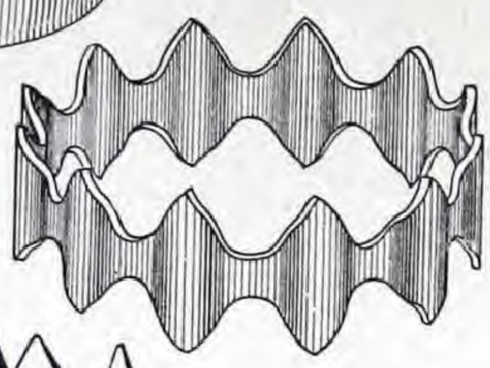
HERE in pictures is the story of an age-old material streamlined to not only improve its efficiency at lower costs, but also to meet the modern trends of present-day construction.

Timber Engineering Company

WASHINGTON, D. C.

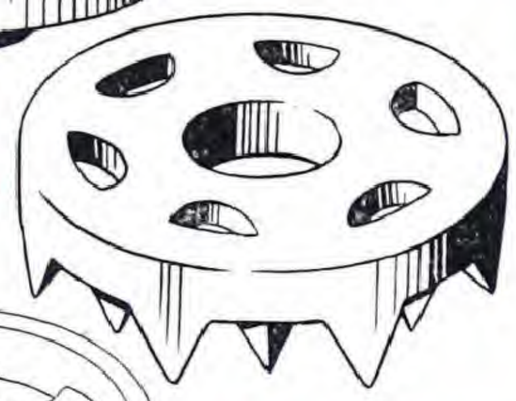


Split Ring
Pat.

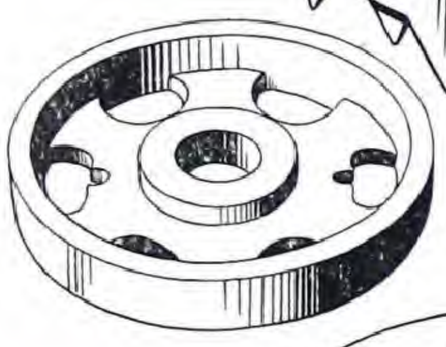


Toothed Ring
Pat.

Claw Plate with Hub
Pat.



Claw Plate without Hub
Pat.



Malleable Flanged Shear Plate
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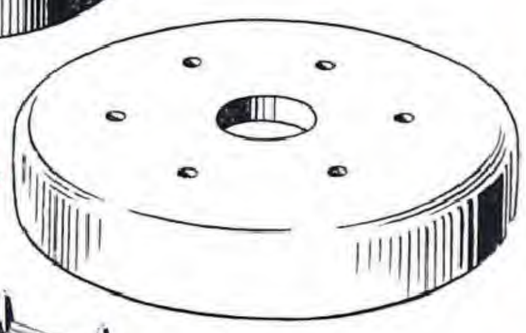

Pressed Steel Flanged Plate
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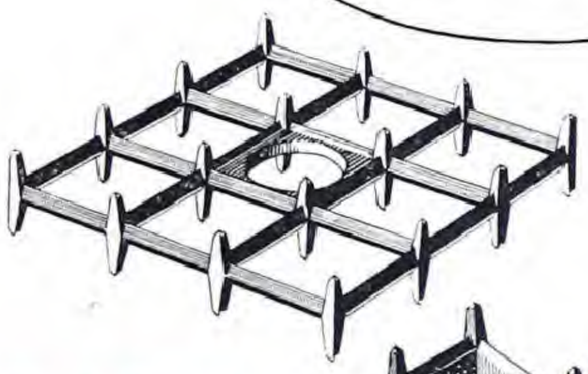
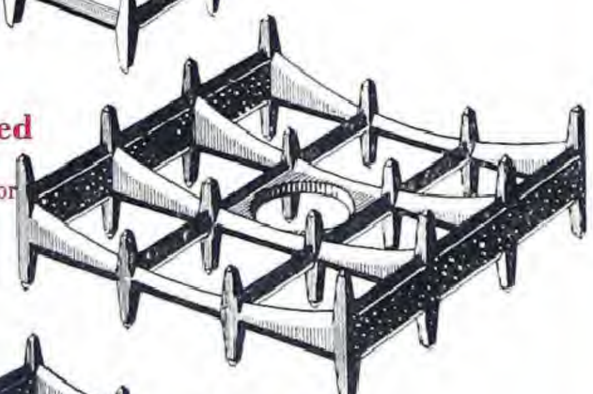
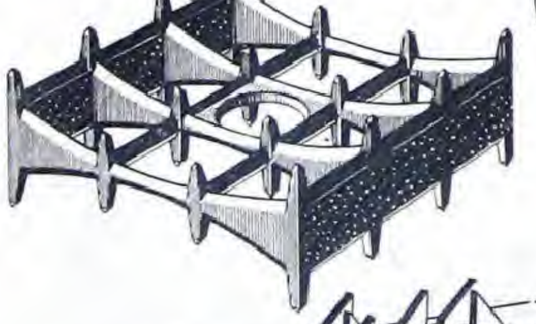


Flat Grid

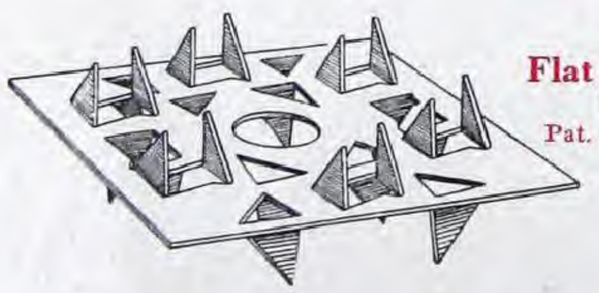


Single Curved Grid
Pat. Applied For



Double Curved Grid
Pat. Applied For

Flanged Clamping Plate



Flat Clamping Plate
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New Style Design with Spaced Members and Teco Connector

Old Style Bolted Design with Solid Members and Steel Gusset Plates

Detailed Comparison of Old and New 40′ Fink Truss

ABOVE is shown a comparison between an old-style 40′ Fink truss, the materials for which cost $80.93, and a new TECO 40′ Fink truss, the materials for which cost $42.96, *or a saving of $37.97 per truss.* Washington, D. C., prices are used in the comparison. The old-style truss, once a standard design by one of the states for schoolhouse construction, has now been replaced by the new TECO design. It will be noted that the TECO design entirely eliminates steel gusset plates and angles, which in the old design cost $26.90. The other hardware costs in the new design are also lower by $4.61.

Designed for a 45-lb. Loading and a 16-ft. Spacing Built of No. 1 Structural Material

Old Design — Bolted Design with Solid Members		New TECO Design — Connector Design with Spaced Members
Old Design	**LUMBER**	**New TECO Design #223**
1–4″x6″x10′	Vertical	1–3″x8″x18′
1–4″x6″x12′	Diagonal	4–2″x6″x18′
2–3″x12″x14′	Splices	2–2″x6″x14′ 1–3″x6″x16′
4–6″x10″x14′	Bottom chord	5–3″x6″x16′
4–6″x12″x12′	Top chord	4–3″x10″x18′ 2–3″x10″x20′
Total 696 FBM @ $40/M = $27.84		Total 560 FBM @ $40/M = $22.40
Old Design	**STEEL**	**New TECO Design**
538 # Gusset Plates and Angles @ 5c/# Cost $26.90		None
Old Design	**HARDWARE**	**New TECO Design**
Machine Bolts 72–1″x9″ $13.73		TECO Toothed Rings 12–2-5/8″ $1.08
" " 24–1″x12″ 5.44		" " 104–4″ 10.93
" " 4–3/4″x14″ .58		Machine Bolts 6–3/4″x10″ .68
" " 2–3/4″x6″ .16		" " 26–3/4″x13″ 3.53
O. G. Washers 48 for 1″ bolts 5.28		" " 2–3/4″x15″ .28
Total $25.19		Plate Washers 68 for 3/4″ bolts 4.08
		Total $20.58
Old Design Total Cost of Materials = $80.93 (100%)		**New TECO Design** Total Cost of Materials = $42.96 (53.1%)

★ ★

Teco Connectors Are Efficient Because They:

1. **Simplify designing in timber**
2. **Improve construction methods**
3. **Provide more efficient use of lumber**
4. **Require less hardware**
5. **Result in more economical structures**
6. **Result in more attractive structures**

The Story

. . . OF A NEW ERA IN THE USE OF TIMBER AS AN ENGINEERING MATERIAL . . .

★ ★

HERE in pictures is the story of an age-old material streamlined to meet the modern trends of present day construction.

While timber has always been widely used it has not always been used wisely . . . that is to say the method of use has been often inefficient and wasteful because sound engineering principles of construction were not applied.

With the advent of TECO timber connectors in 1933, timber has taken on new importance as an *engineering material* . . . through basic research and engineering design studies by the industry, the U. S. Forest Products Laboratory, the Forest Products Division of the U. S. Department of Commerce, and many leading universities.

The U. S. Bureau of Standards, in a report entitled "Materials Improvements," has stated in part: "Wood continues to improve its standing in the engineering field. Grading, standard working stresses for structural timber, better practices in the preservative treatment of wood, more efficient timber joints, the introduction of laminated construction and an increasing use of structural plywood are some of the factors which have brought this about. . . . The use of metal dowel connectors for timber framing continues to grow."

This bulletin is a pictorial presentation of that growth. While in use in the United States for a period of only five years, more than 12,000 light and heavy frame structures have been built.

The Timber Engineering Company, a subsidiary of the National Lumber Manufacturers Association, manufactures and sells patented TECO timber connectors for the purpose of saving money for builders and making available to a wider range of light and heavy frame buildings, the fundamental economy of timber construction.

With TECO connectors, joints in timber framing can be made much stronger than with the ordinary bolt and plate fastenings of conventional building construction. Coupled with this great contribution to structural efficiency they are also simple, inexpensive, and easily installed.

Such greatly increased strength at critical points in the average structural assembly is of such prime engineering importance as to change the entire designing principle and cost aspect of many types of structures.

Any user or builder of structures and industrial assemblies, which must carry heavy loads, can ordinarily save money by using the TECO connector system of construction.

TECO-type joints eliminate the traditional, but costly, inefficient, and cumbersome array of steel or iron plates, angles, and straps associated with ordinary timber joints. With but a fraction of their weight and expense, TECO connectors greatly increase the structural efficiency over these outmoded forms.

TECO connectors accomplish their purpose through decentralization of loads and stresses at joints. A bolt or a series of bolts in ordinary timber framing cause all stresses to centralize on the small area against which bolts bear. TECO connectors enlarge the bearing area of such stresses to practically the entire width of the timbers involved. It is instantly apparent that with TECO construction the per-square-inch load of actual load-bearing areas in joints is greatly reduced and that the strength of a particular joint so treated will be vastly increased.

Because of their centralization or localization of loads, ordinary bolted joints are never as strong as the wood members they join. Because of this it has always been the custom in designing for bolted joints to use members much larger than actually necessary to provide enough wood for safe bolt-bearing purposes at joints. Such designing is expensive and wasteful. TECO connectors eliminate this waste because TECO joints develop the full working stresses of the members they join.

Technical data and typical designs for many types of structures are available upon request. Distributors of TECO products and consulting engineers are located in principal cities.

STRONGER, LESS EXPENSIVE, BETTER-GRANDSTANDS, BLEACHERS, AND SKATING

1. One of California's many wood framed, diagonally sheathed, earthquake resistant school buildings. TECO connectors used for attaching cross member framing braces. Exterior view California wood frame school.
2. Exterior view California wood frame school.
3, 4 and 5. Plant High School gymnasium, Tampa, Fla. Prefabricated trussed arches. This roof arch is noteworthy because it demonstrates the possibilities of using connectored construction where large bending moments, as in the knees of the frame, must be provided for. Total roof span is 104′, clear span between columns 80′.
6. Stadium cantilever prefabricated 70′ trusses, University of British Columbia, Vancouver, B. C. Seating capacity 1,600 with open bleachers on each end seating 1,000 persons.
7. Interior ice arena, Vernon, B. C. Prefabricated 130′ clear span trusses using plywood gusset plates, erected by unskilled labor. Seating capacity 3,000 persons.
8. Consolidated School, Lulu, Georgia. Prefabricated 40′ trussed rafters.
9. Woodlawn School, Calif. Built in earthquake zone by W.P.A. labor. Like all modern schools in California, this is of earthquake-resistive construction. Roof structure and bracing employ TECO toothed ring connectors.

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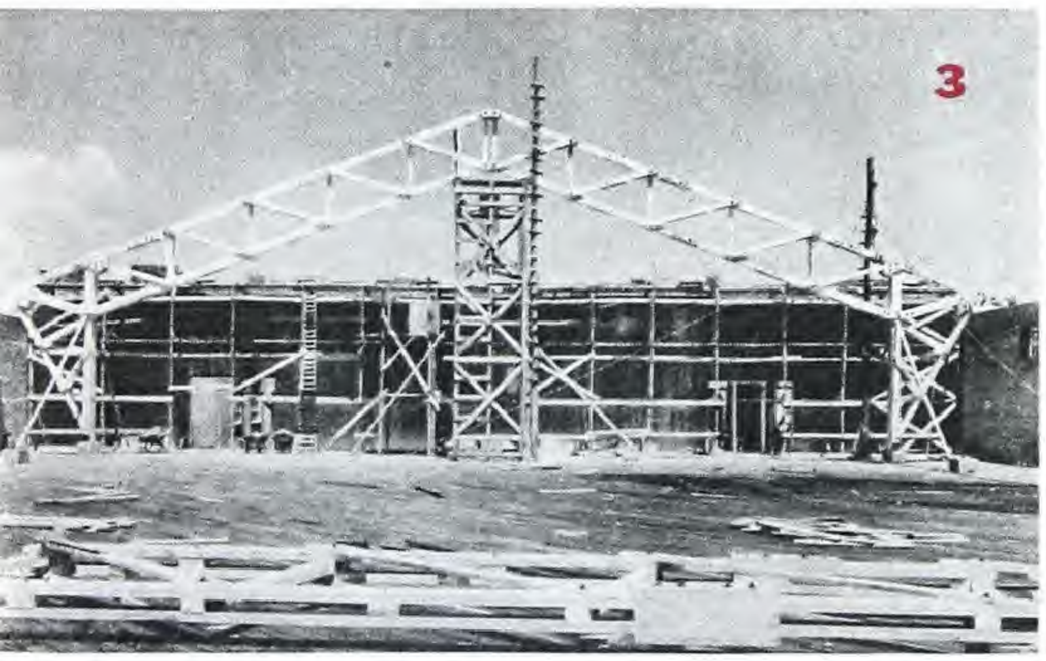

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LOOKING SCHOOLS, GYMNASIUMS, RINKS BUILT WITH TECO CONNECTORS

1. Assembly hall, Potlatch, Idaho, high school 50′ roof trusses. Economical, easy to build.
2 and 3. Superior Curling and Skating Club, Superior, Wisconsin. Two views of 125′ clear span lattice arch trusses erected with W.P.A. labor.
4. Ice arena, Spokane, Washington. Prefabricated Arch-Rib 120′ trusses, ready for erection. Trusses supported on 14″ x 14″ timber columns about 24′ high.
5. One unit of baseball bleachers, Booker T. Washington High School, Atlanta, Ga. Built with unskilled labor.
6. Grandstand trusses, Union High School, Klamath Falls, Ore.


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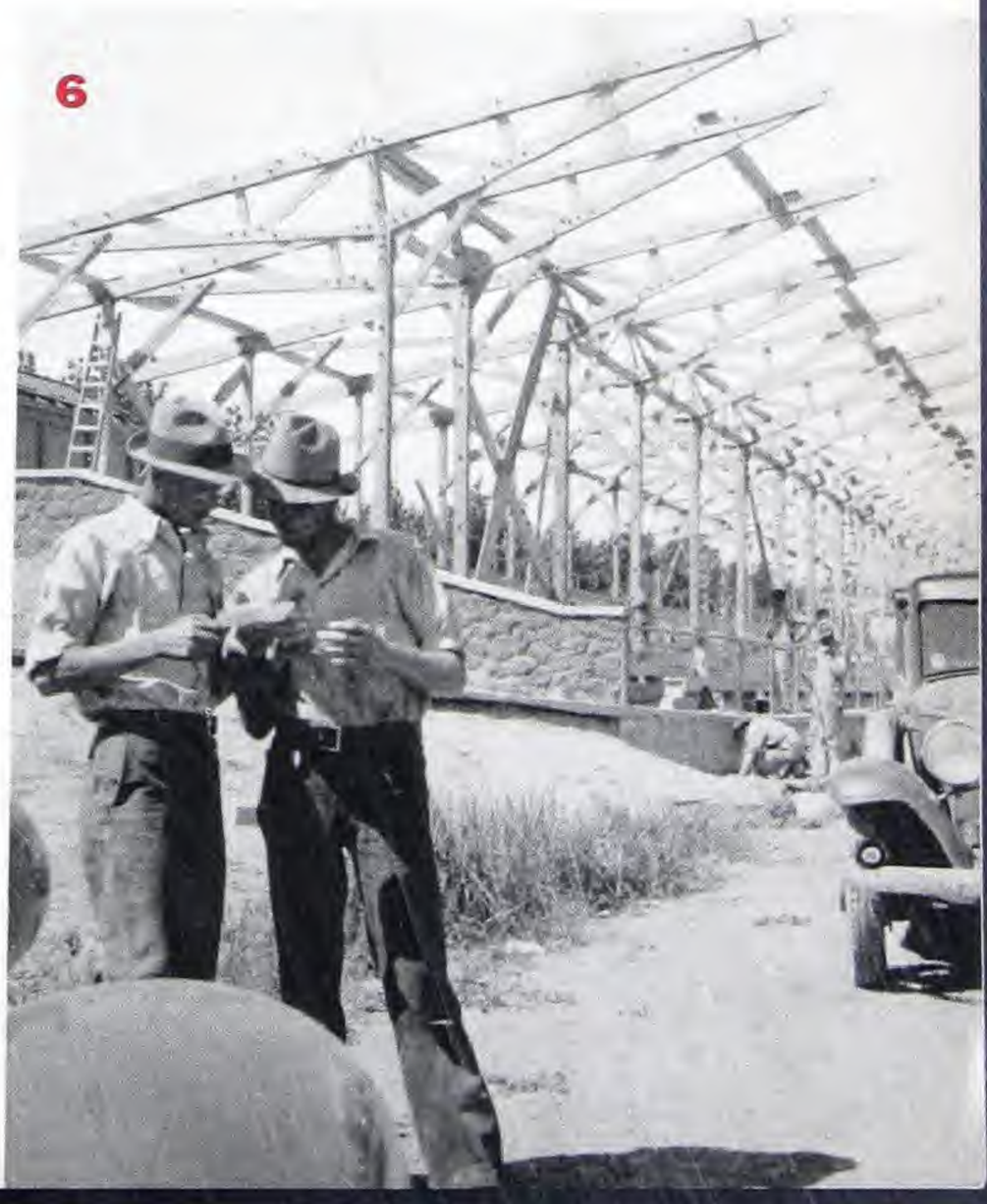
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THE CONNECTOR SYSTEM HAS ORIGINATED A NEW, LESS EXPENSIVE ENGINEERING PLAN FOR TOWER STRUCTURES

1. Prefabricated forest lookout tower 100′ high, Cass Lake, Minn. In past year 115 wood towers supplied U. S. Forest Service and Biological Survey.
2. Head of the Lakes Broadcasting Company, WEBC, Superior, Wis. Lower wood section 120′. Total height 360′. Old tower raised on all-wood base.
3. Forest lookout tower 100′ high, Rocky Butte Mountain, National Park, Ore.
4. Forest lookout tower 120′ high, Brewton, Ala.
5 and 6. Crossarm construction employing split rings to increase crossarm life in two pole "storm guyed" structure and three pole angle structure. Washington Water Power Co., Spokane, Wash.
7 and 8. Lookout towers 100′ high, Jonesboro, Ill., and Denismore, Fla. Lumber prefabricated at plant and shipped ready-to-erect.
9. Gravel bunkers, Oakland, Calif. TECO split rings and TECO flush type shear plates used at joints.


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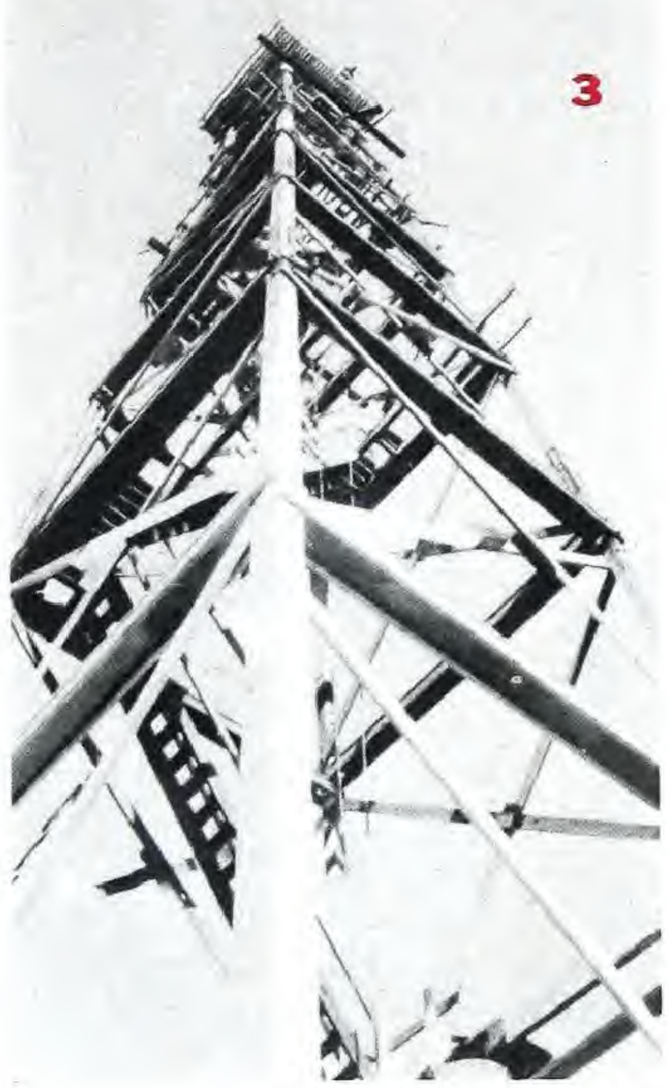
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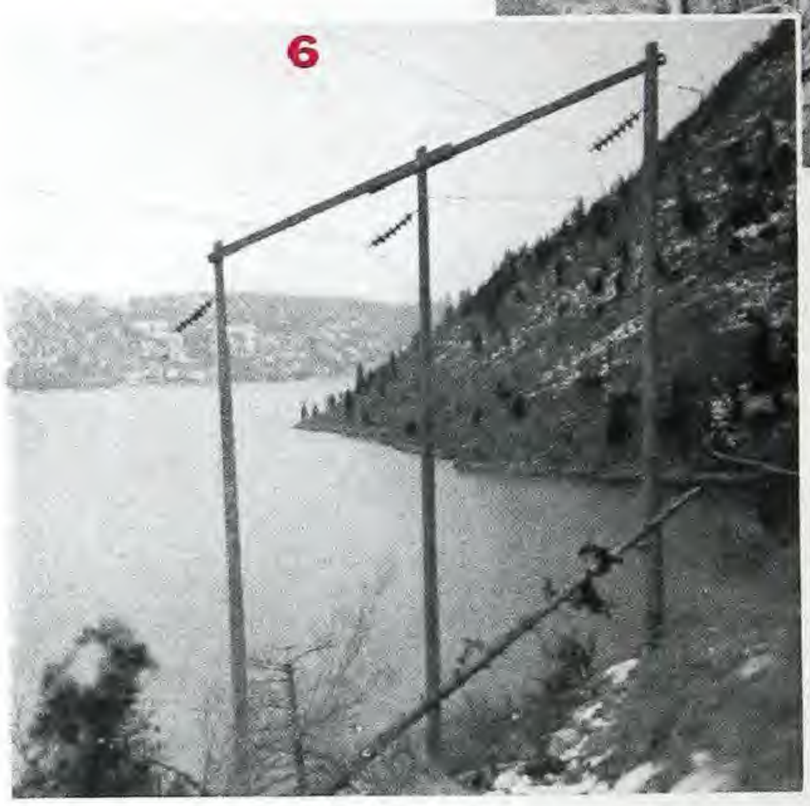
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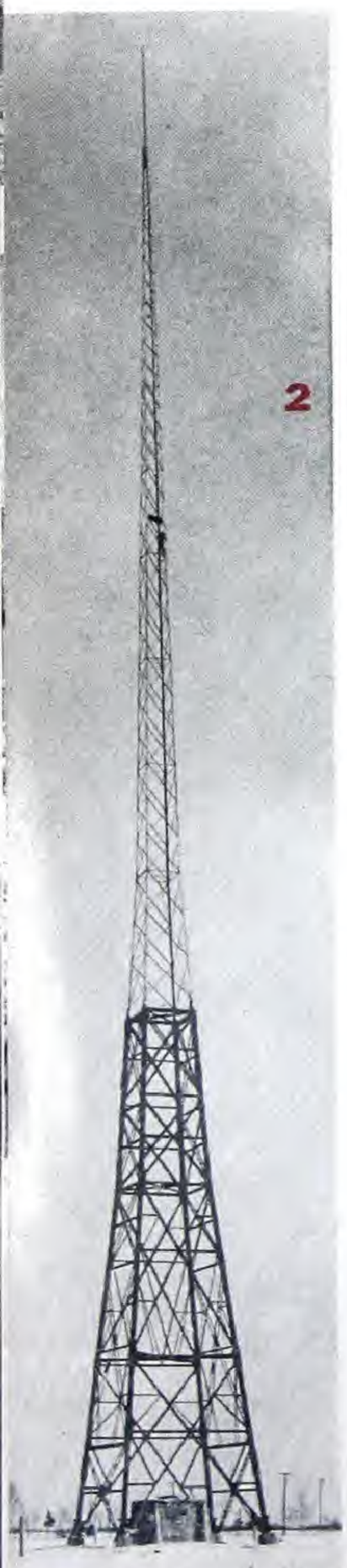
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IN ONE YEAR TIMBER-CONNECTOR TOWERS TOOK 115 OUT OF 118 COMPETITIVE TOWER JOBS

1. Tank tower B-Bar-H Ranch, Garnet, Calif. Split rings carry loads at joints and splices.
2. Lookout tower, Denismore, Fla. Prefabricating panels at factory.
3. Water tank tower for automatic sprinkler supply, W. P. Fuller Co., South San Francisco, Calif. Toothed rings used in existing tower to provide earthquake resistance.
4. U. S. Forest Service 100′ lookout tower, Lufkin, Tex. Economical construction.
5. U. S. Forest Service 30′ tank tower, 5,000 capacity tank. All-wood-connector tower, Jornada Experimental Range, near Los Cruces, New Mexico.


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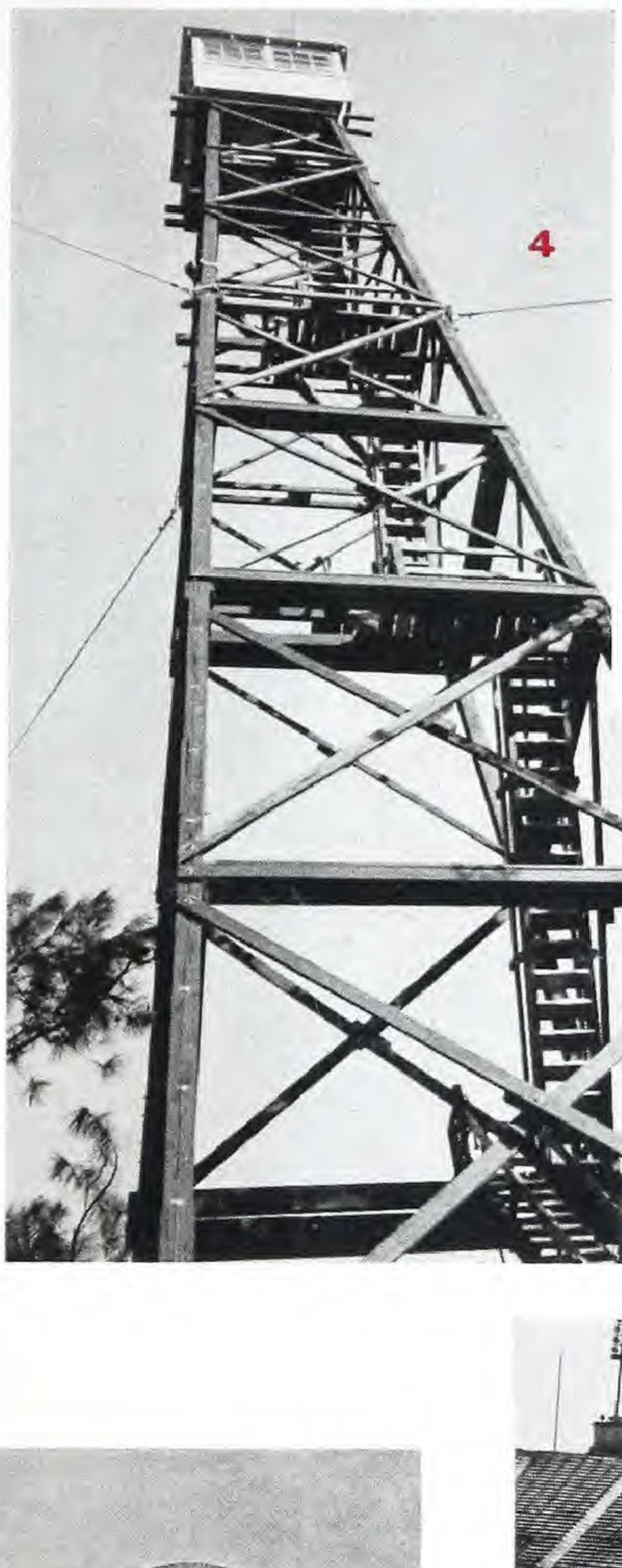
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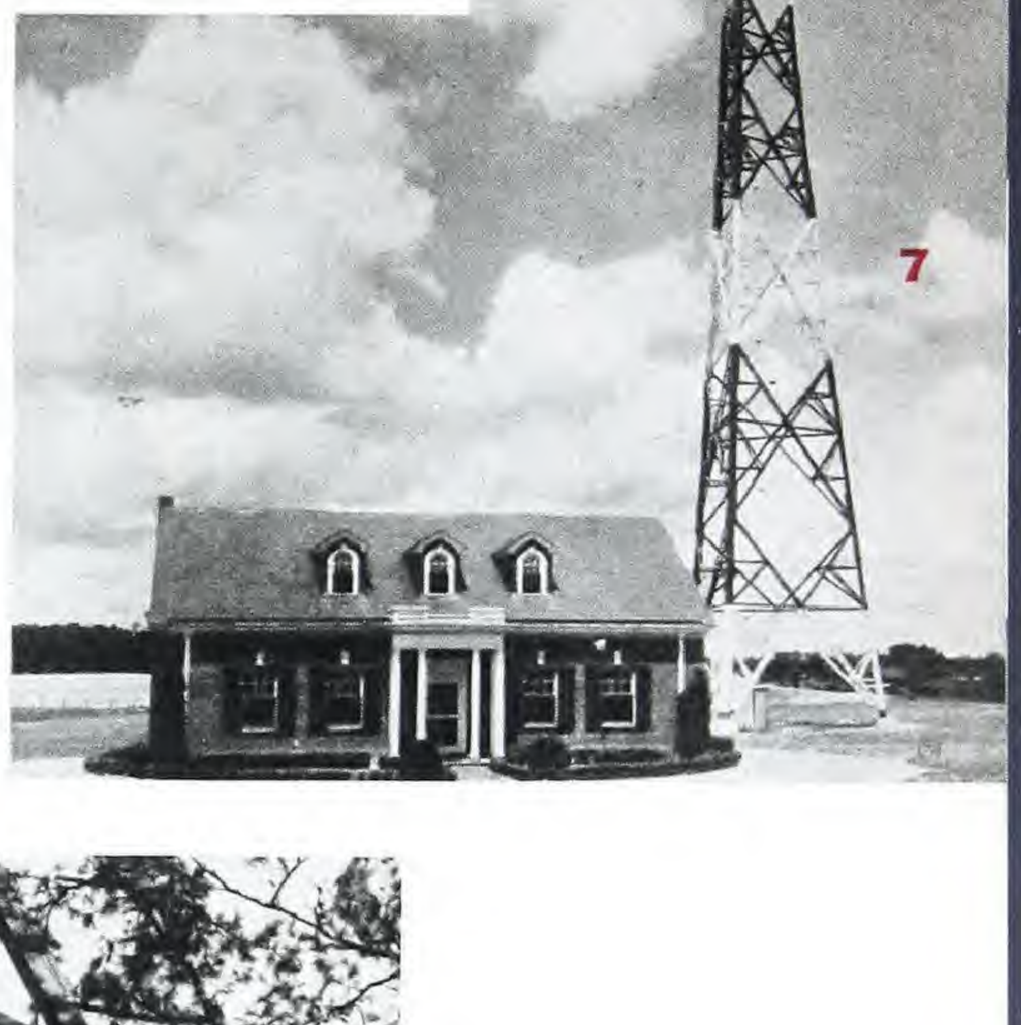
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6. Water tank tower, National Lumber & Creosoting Co., Houston, Tex. Tower built by company crew.
7. America's tallest all-wood structure. 326′ triangular radio tower WRVA radio station, Richmond, Va. All-wood structure fabricated at job site.
8. Ski jump, Soldiers Field, Chicago. Tallest free standing ski jump in U. S. This 180′ all-wood structure is erected each winter; demounted and stored during the summer.

TIMBER CONNECTORS FOR PRIMARY AND SECONDARY BRIDGE CONSTRUCTION SAVE MATERIAL AND LABOR COSTS . . . . . .


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1. Dolan Creek Bridge, Monterey Coast Highway, Calif. A 180′ timber arch, four 38′ timber girder spans and thirteen 19′ stringer spans used in crossing V-canyon with grade line 130′ above stream bed.

2 and 3. Timber arch centering for six 155′-175′ concrete spans on one of Ohio's largest highway bridges crossing Little Miami River, Foster, Ohio. Timber fabricated at job site. Plywood used in concrete forms.

4. Golden Gate Bridge, San Francisco, Calif. Prefabricated, temporary tower sections 60′ to 150′ in height. Erected in same manner as steel.

5. Bear Canyon Bridge, Wash. Preframed and creosoted, length 440′, roadway 20′, loading H-15, trusses 120′ and 140′ with deck about 120′ above bottom of canyon. Bridge is unique in using timber-connector tower rising from near low point of canyon.

6. Arch centering for concrete highway bridge, Butler Valley, near Eureka, Calif. Erection of bowstring truss to serve without mid-stream support. Span of arch centering 110′ and rise 23′. Total combined loading two trusses was 105 tons.

7. A 60′ pony truss bridge, 22′ wide, H-15 loading, over Johnson Creek, Multnoma County, Ore. Engineer in charge claims savings of 50% in time, labor and hardware and 33% in lumber.

TIMBER BRIDGES USE MAXIMUM OF LOCAL LABOR AND MATERIAL

1 and 5. Composite trestle-type bridges, Port Angeles, Wash. Two bridges, each 755′ long, made up of 26 panels of 29′ each. Maximum height 100′. Each structure has 24′ clear roadway, with sidewalks. Designed for H-20 loading. Preframed, treated, delivered ready to erect.

2. North Dakota State Highway Department grade separation viaduct, near Lemmon, S. D. Built to N. D. State standard plans. TECO toothed rings used.

3. Rattlesnake Creek Bridge, Calif. Another of the numerous timber bridges in the extensive California State highway system. TECO connectors used in the three-hinged arch and approach bents.

4. Suspension bridge, Lowell, Mass. Temporary 475′ cable suspension bridge supported by timber-connector 55′ towers. After framing, towers were raised by locomotive crane and guyed.

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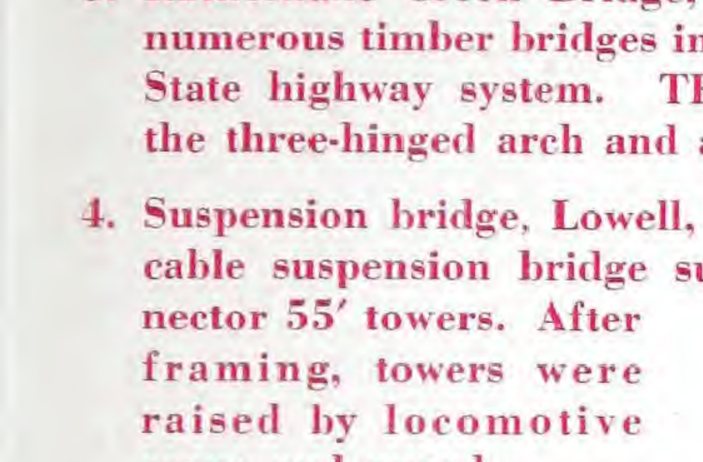

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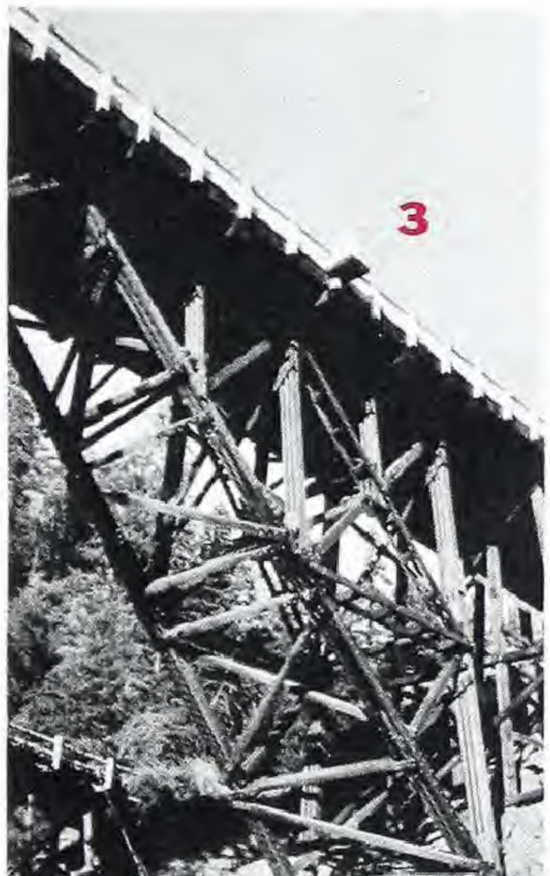

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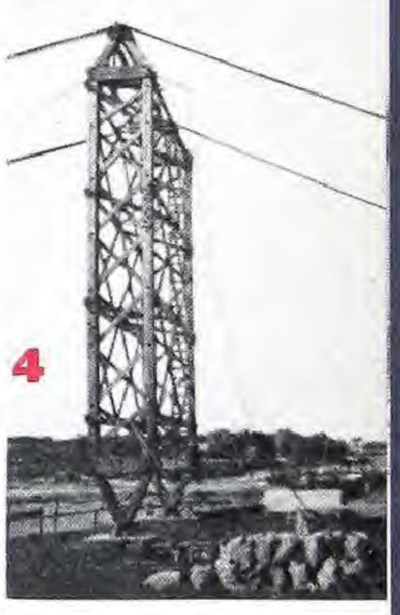
6. Buffalo Creek Bridge, Lewisburg, Pa. Two 91′ low truss spans connected by solid section floorbeams with outriggers at their ends and supporting a continuous composite timber and concrete floor.

7. Connector foot bridge 45′ span, width 5′, connecting levee top with pump house. Red River, Atchafalaya and Bayou Boeuf Levee District, La.



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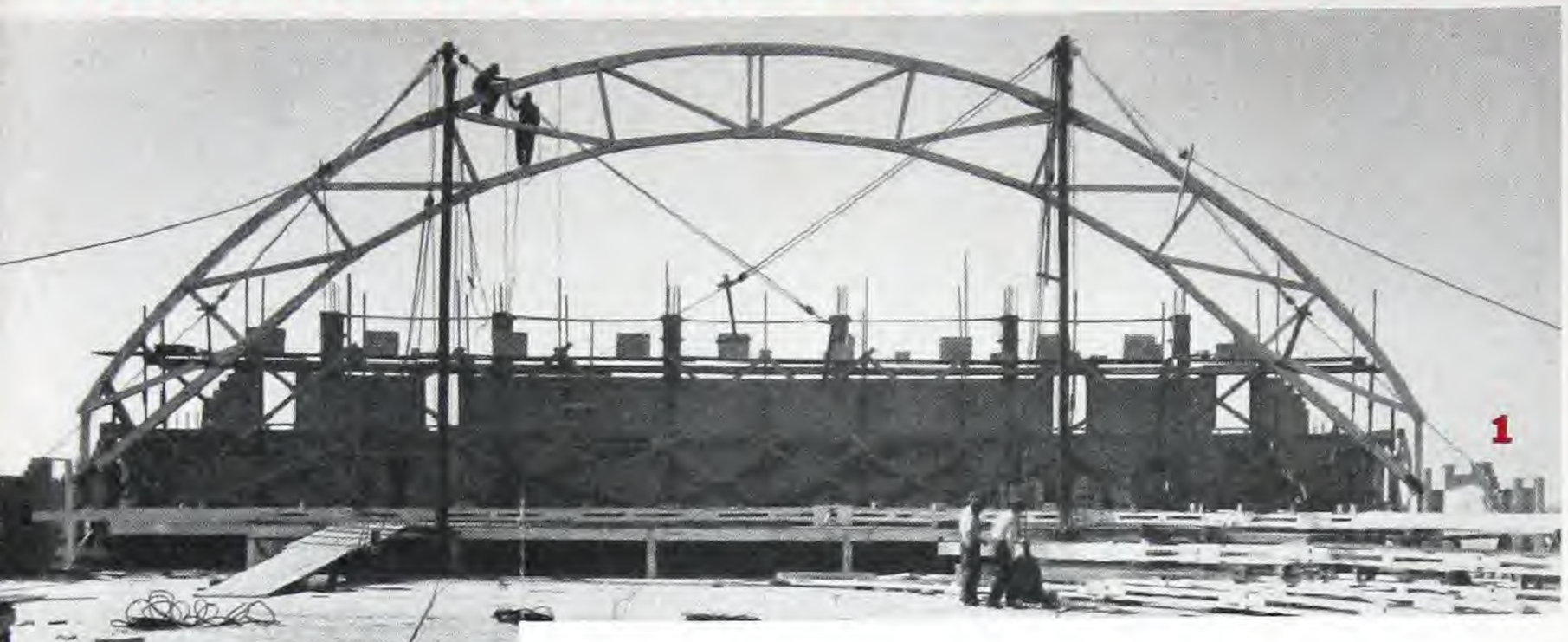
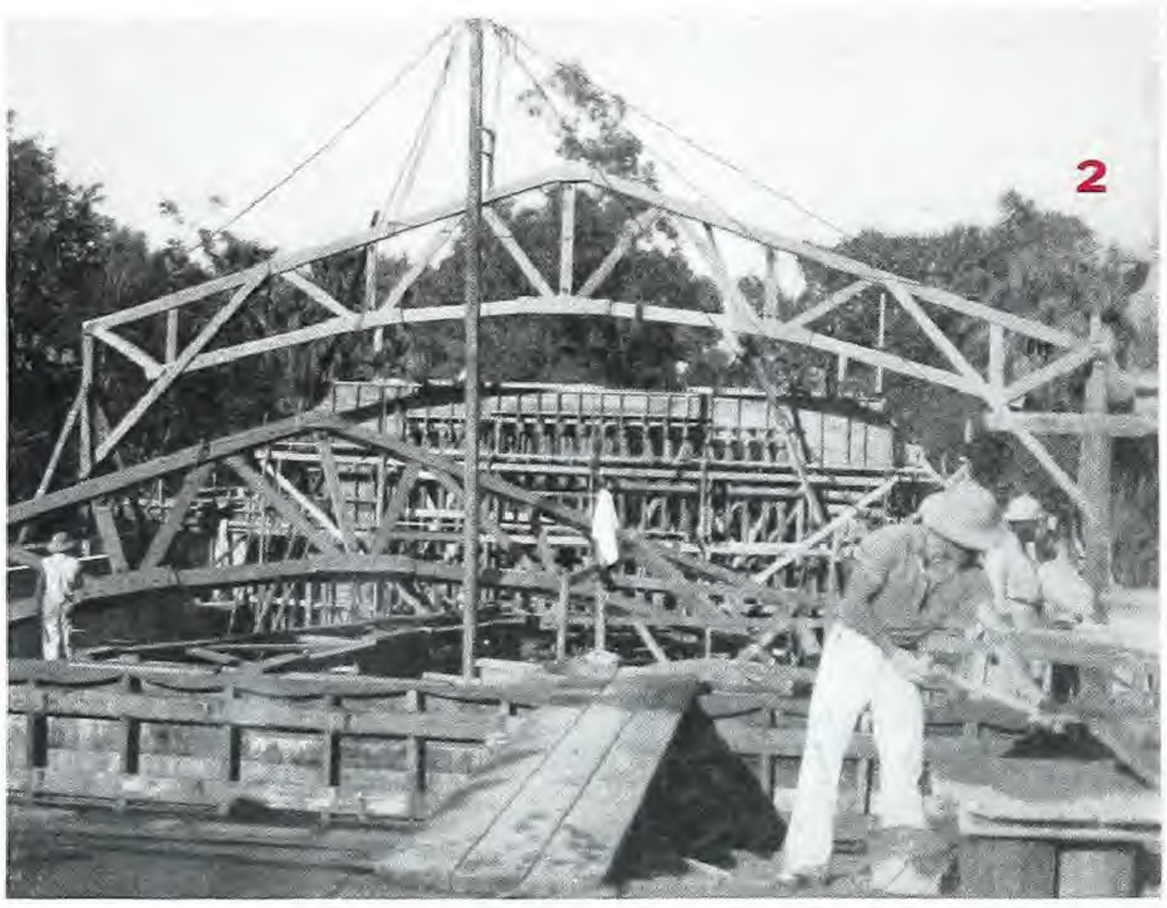
TIMBER AS ENGINEERING MATERIAL IN PUBLIC ASSEMBLY STRUCTURES



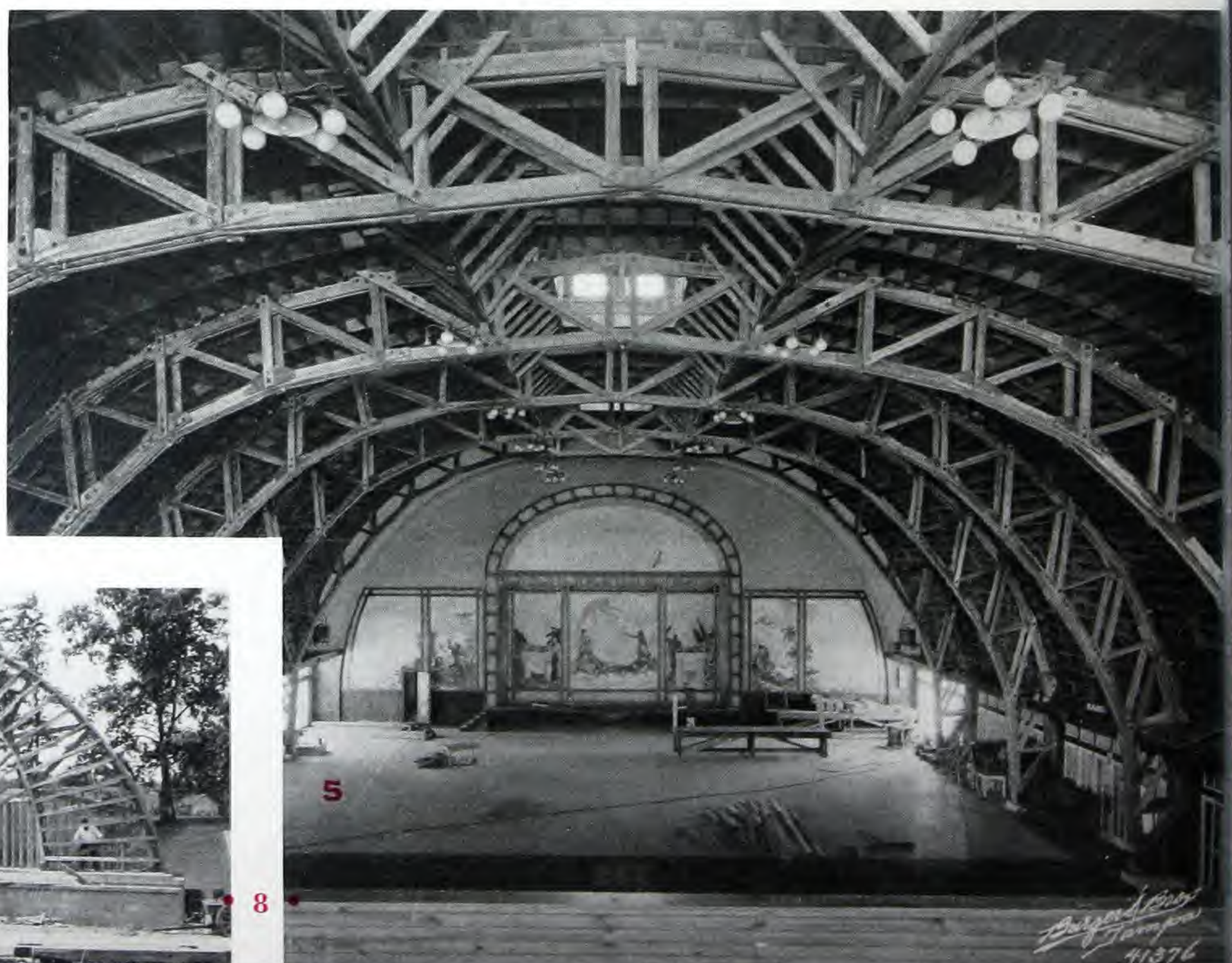
1. City auditorium, Sarasota, Fla. Span 100′, depth 6′, height above floor 33′ 2″ to lower chord. Nine arches spaced 15′ O.C., load 40# —live and dead load. Each arch erected as a single unit.



2. Theater, Palm Springs, Calif. Trusses fabricated at job site and swung into position with gin pole.

3 and 4. Orchestra shells, Detroit, Mich., and Ann Arbor, Mich. Detroit shell seating 100-piece orchestra; all-wood frame completely laid out, timber cut to size, fabricated and erected in 10 days. Trusses erected as unit with caterpillar crane. Illustration 4 shows similar job at Ann Arbor.

5. Civic Center auditorium, Clearwater, Fla. Six arches of 80′ span, 20 bays, 40# live and dead load. A remodeling and strengthening job aided by TECO connectors.



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- - - - AUDITORIUMS, CHURCHES, THEATRES, ORCHESTRA SHELLS

1. Salem Evangelic Church, educational building, New Orleans, La. Timber-connector trusses 40′ span displace trusses of other material because of greater economy and attractive appearance.

2. National Symphony Orchestra shell, Washington, D. C. Built on floating barge on Potomac River by W.P.A. under direction of National Park Service. View through shell opening shows trusses and interior framework under construction.

3. Church trusses, Fond du Lac, Wis. Prefabricated 50′ trusses shipped knocked down, ready for assembly and erected as units.

4. City park shelter houses, New Orleans, La. Timber-connector roof trusses made for economy in all types amusement park structures.

5. Fletcher Memorial Chapel, Los Angeles, Calif. Toothed ring connectors used in roof truss construction.

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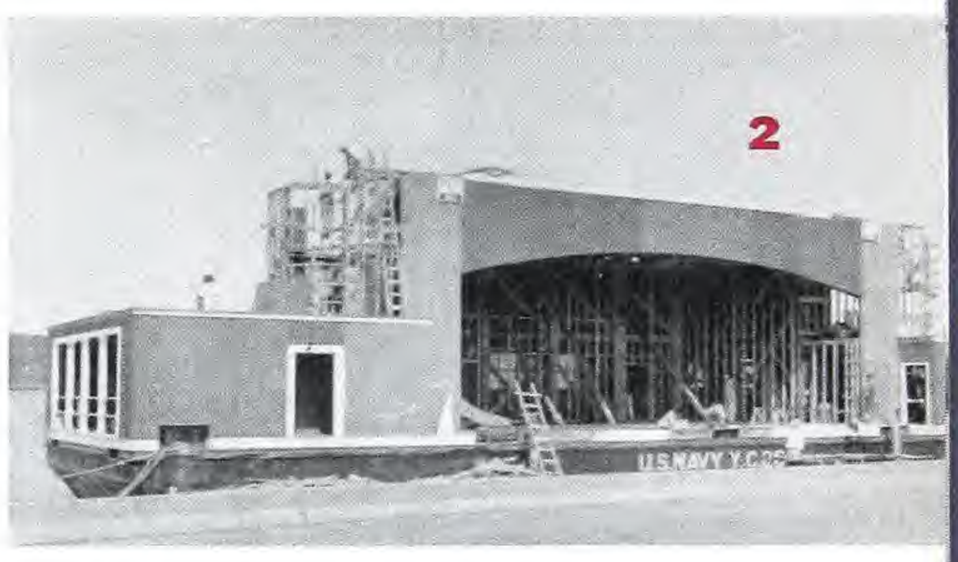

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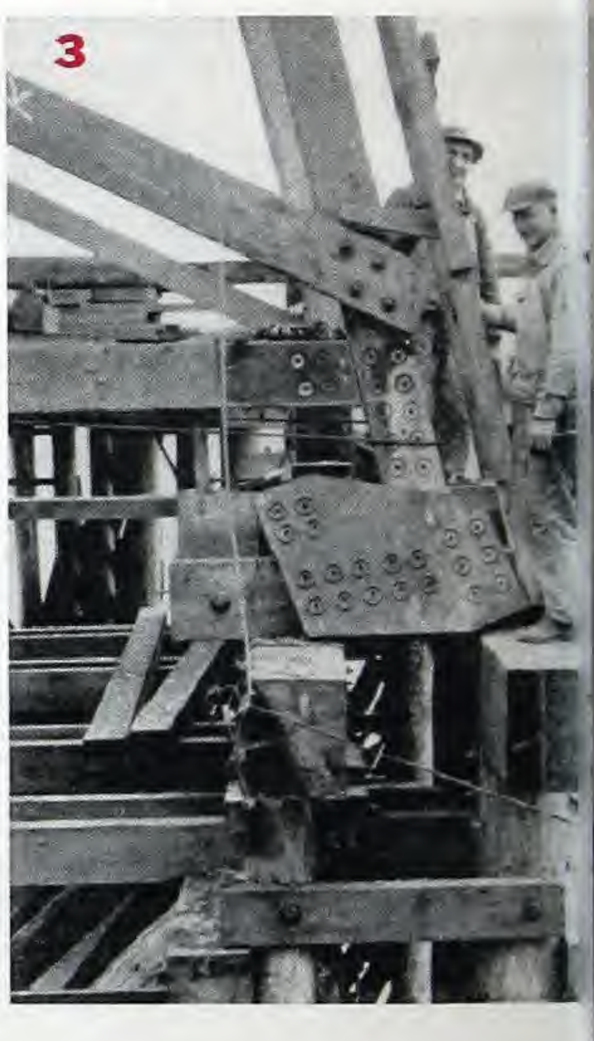
LEADING RAILROADS IN ALL SECTIONS ARE USING TIMBER CONNECTOR CONSTRUCTION . . . .

1. Balanced bucket type coal dock rebuilt by Northern Pacific Railroad Company engineers using TECO toothed ring connectors in bracing members.

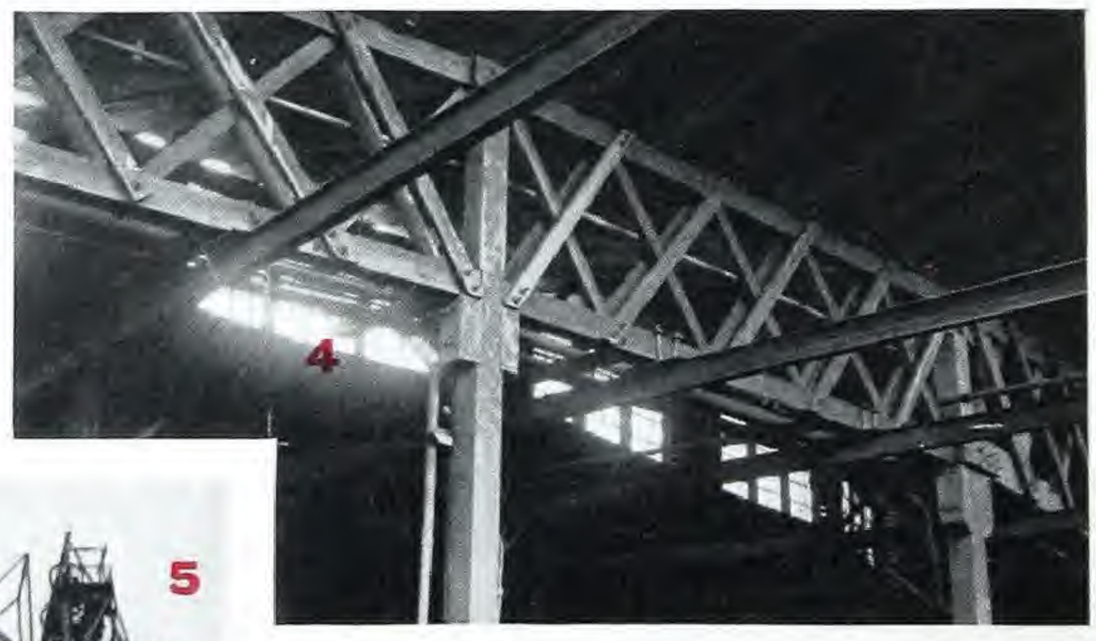
2. Chicago and Illinois Midland Railroad trestle using TECO toothed rings at bracing connections.

3 and 5. M Street lift-span bridge, Sacramento, Calif. Temporary railway bridge with 90′ lift-span built with timber-connectors and 29 ply plywood gusset plates. Towers were fabricated on ground and some of the sections, erected in one piece, comprising the three legs on one side, were 50′ long.

4. Round house timber-connector trusses, C. & O. Railroad, Clifton Forge, Va. Timber-connector trusses are used in many types of railway light and heavy frame buildings.

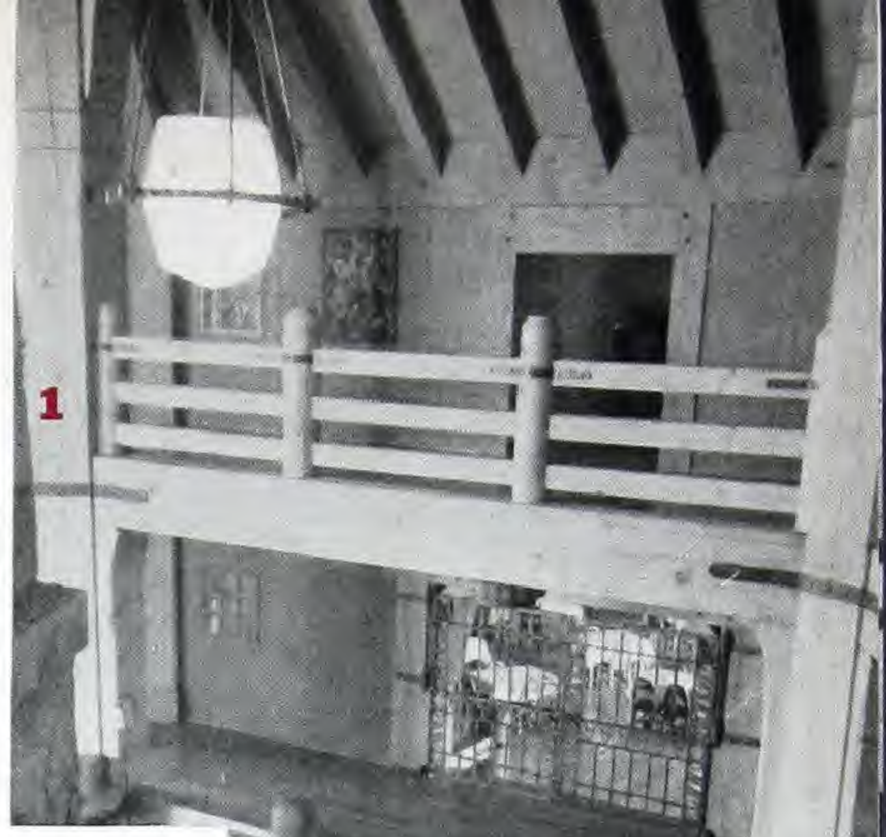


6. Creosoted timber trestle with spike grids in brace joints. C. & O. Railroad near Cincinnati, Ohio. An increasing number of railroads are using flat, single curve and double curve grids for trestle construction.



. . . SYSTEM OFFERS GREATER STRENGTH AND RIGIDITY WITH LOWER MAINTENANCE COSTS

1. Timber Line Lodge, at foot of Mt. Hood, Oregon. Illustration of hexagonal main lounge showing detail of heavy timber framing of roof. The ultra fashionable Sun Valley Lodge at Ketchum, Idaho, built by the Union Pacific Railroad, also used timber connectors in the roof framing.
2. and 6. Pier construction, C. & O. Pier No. 2, Newport News, Va., used 4″ plain grid embedded with common bolt between cap and brace; single curve grid used between brace and pile; 4″ split ring connectors used for joining cap timbers.
3. Detroit Terminal loading dock, 600′ x 50′. Thirty-five 50′ trusses fabricated and assembled at job site and erected in units.
4. Southern Pacific Railroad trestle, Cochran, Oreg. Toothed rings used in bracing.
5. Packing house trusses—Two carloads of ready-to-erect trusses for Missouri Pacific Railroad's citrus warehouse, Engleman Gardens, Texas.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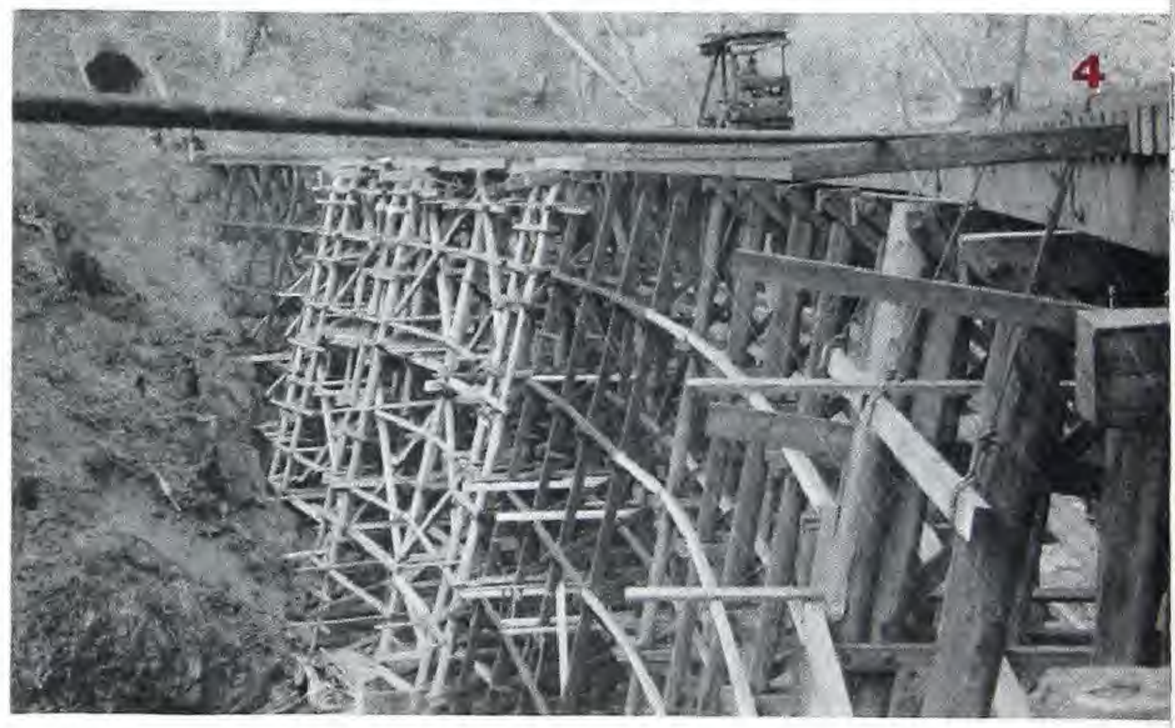
BECAUSE OF HEAVY LOAD-CARRYING REQUIREMENTS THE ENTIRE RANGE OF RAILWAY STRUCTURES EMPLOYS TIMBER CONNECTOR CONSTRUCTION . . .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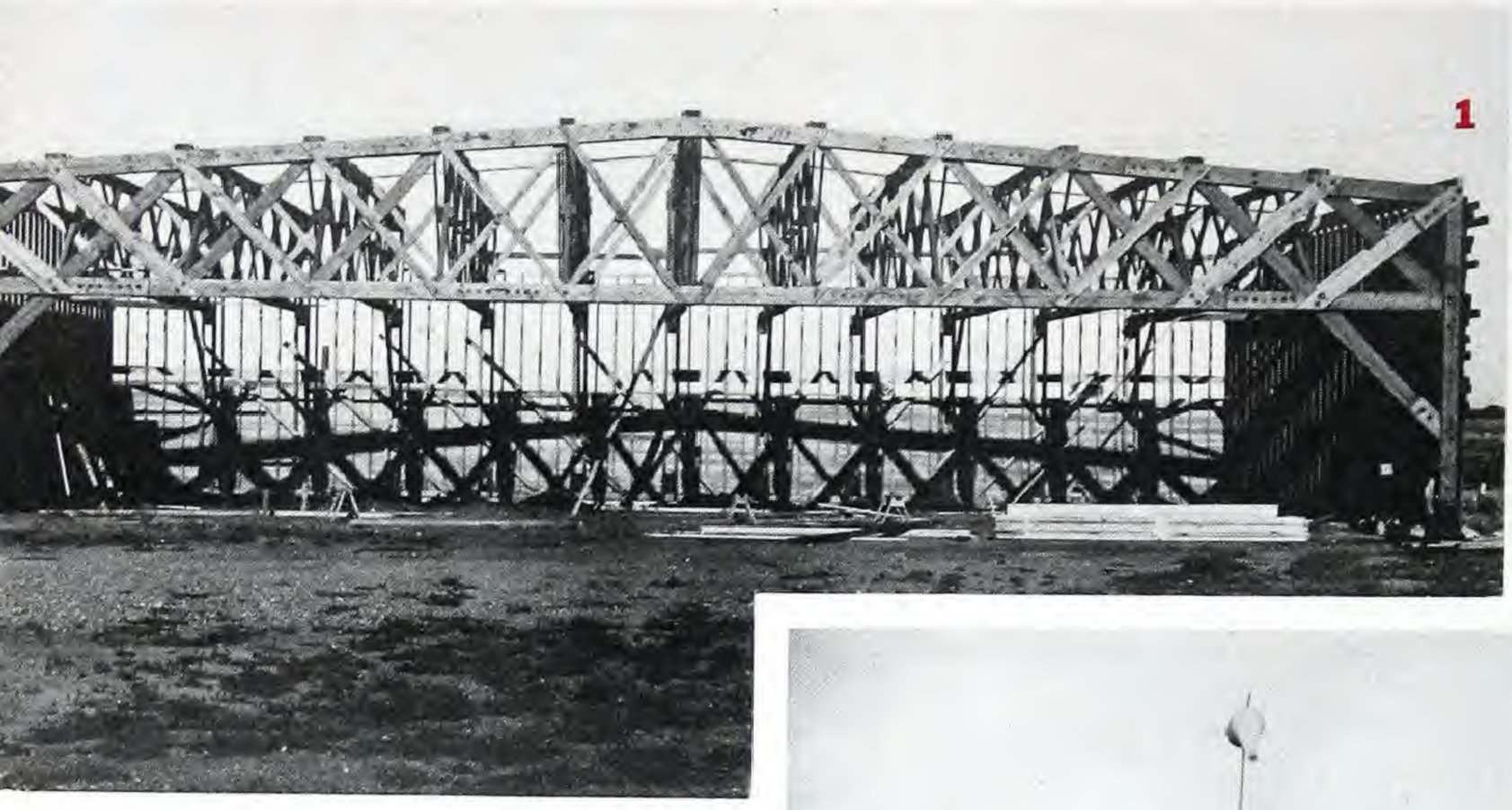
6

PRESENT USES . . .

1. Roof trusses
2. Overhead cranes
3. Timber bents
4. Pile heads and caps connections
5. Trestles
6. Bridge decks
7. Pontoon bridges
8. Ballast deck stub piles
9. Piers
10. Pier fenders
11. Sway bracing
12. Coal pockets
13. Auto loading docks
14. Rail posts and tie connections
15. Scaffolding
16. Coaling towers
17. Guard rails

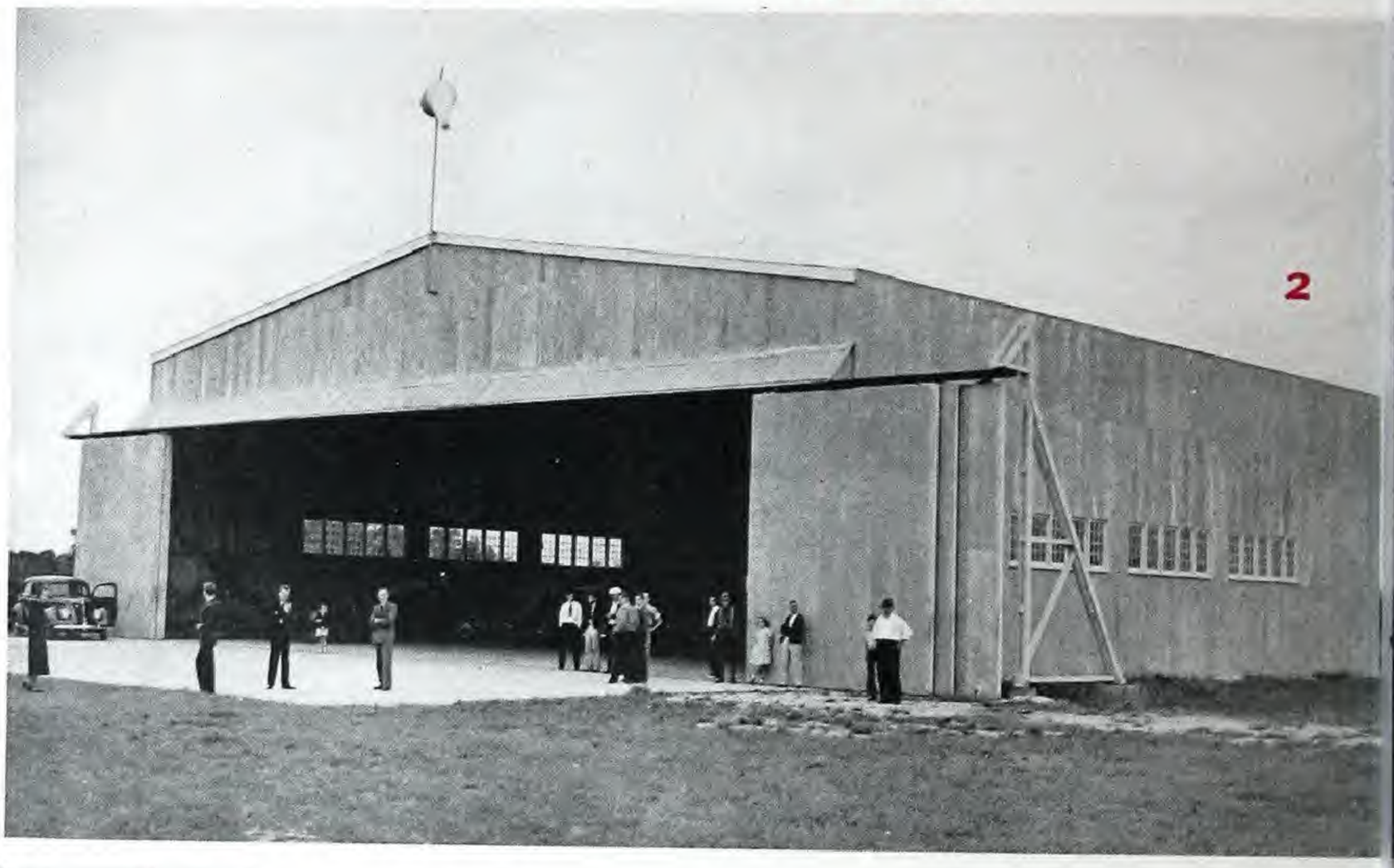

5

TIMBER CONNECTOR HANGAR TRUSS DESIGNS ARE AMONG ACCEPTED STANDARDS OF FEDERAL AND STATE GOVERNMENTS



1. Bismarck, N. D., airport 80′ hangar truss, using split ring connectors. Note wide, clear span. Timber-connector trusses are among standard designs adopted by U. S. Bureau of Air Commerce.

2. Deland, Fla., hangar, inside clear width 80′. Clear height, floor to bottom chord of truss, 20′. Timber-connector hangar trusses are standard construction in Florida.



3. Burlington, Vt., municipal airport. Width 100′, depth 80′, clearance 22′. Economical construction for large and small hangars.

4. Bar Harbor, Me., hangar. Width 100′, depth 80′, clearance 22′, with door opening 96′ wide. Split rings used in all joint connections.

5. Wilmington, Del., airplane hangar, 150′ bowstring trusses with top chords glued up solid curved pieces. TECO split rings used in lower chord.

PRE-FABRICATED PORTABLE OIL STRUCTURES


1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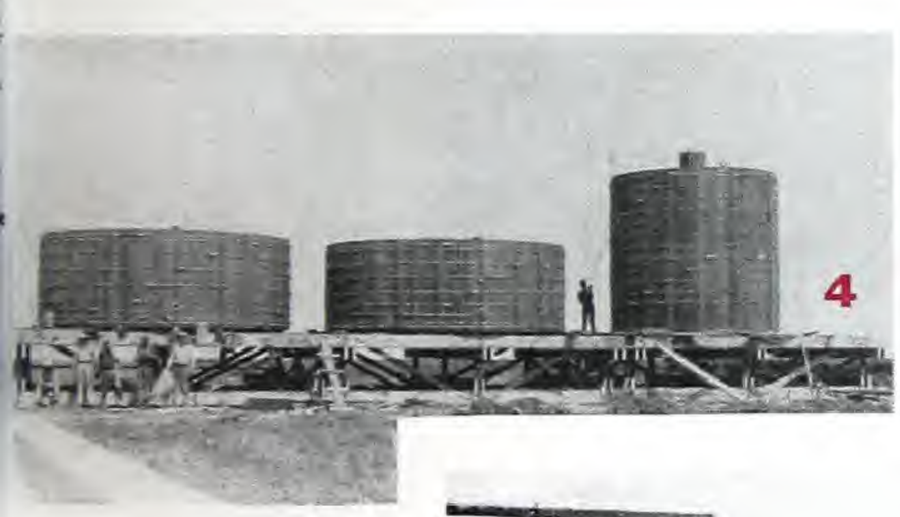
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1 and 9. Portable warehouse, 30′ x 60′. Pure Oil Company, Louise, Texas. End view showing completed portable framing. Note floor joists supported by framed bents. TECO split rings used.

2 and 3. Pipe racks. Stanolind Oil and Gas Company, High Island, Texas. Prefabricated, demountable, all-wood racks, with split rings are standard items stocked for immediate delivery.

4. Tank foundations. Timber-connector built tank foundations on location of The Pure Oil Company, Louise, Texas.

5. Derrick substructure under construction for Texas Company, Freeport, Texas. One truss assembled and raised in place. Marsh location, ground bearing allowed 450 pounds per square foot. Completed structure 16′ high, 28′ square at top and 36′ at bottom.

6. Walking beam. Laminated connectored walking beams are now manufactured in 26′ lengths and standard cross sections from 14″ x 18″ to 18″ x 30″. A 14″ x 30″ x 26 foot beam has a safe working load (A. P. I. Stds. No. 4) of 37,910 pounds. A 14″ x 24″ x 26′ beam demonstrated under test at University of Washington an ultimate strength of 98,000 pounds.

7. Oil derrick. Prefabricated, demountable all-wood 130′ derrick. California field tests have proven efficiency of this new type. Split rings used at shop joints, flush type shear plates used at field joints.

8. Prefabricated roof trusses. Timber trusses are now prefabricated and assembled at factory and shipped by truck or rail ready-to-erect.


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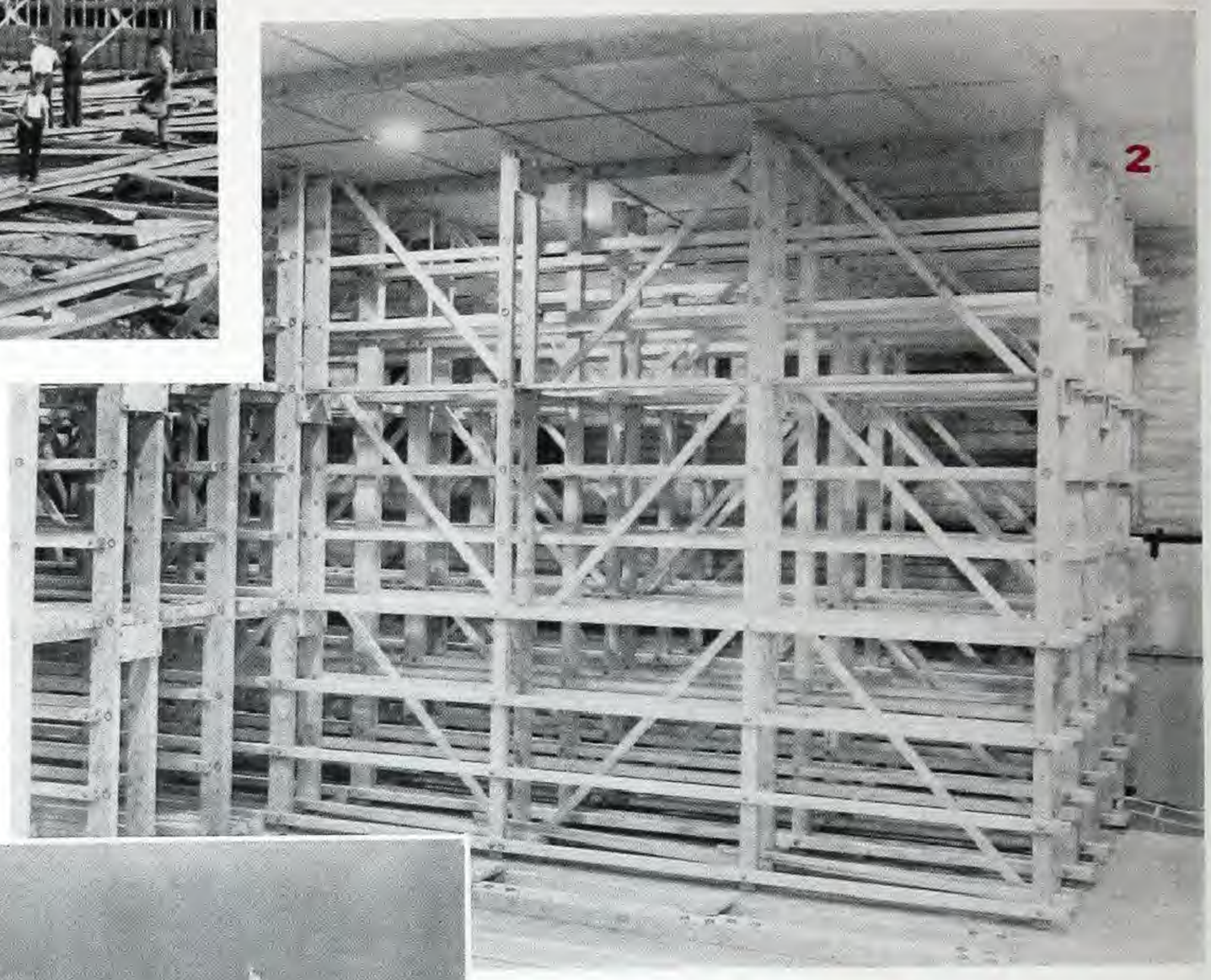
CLEAR FLOOR SPACE NEEDED IN INDUSTRIAL BUILDING EASILY OBTAINED WITH CONNECTOR TRUSSES


1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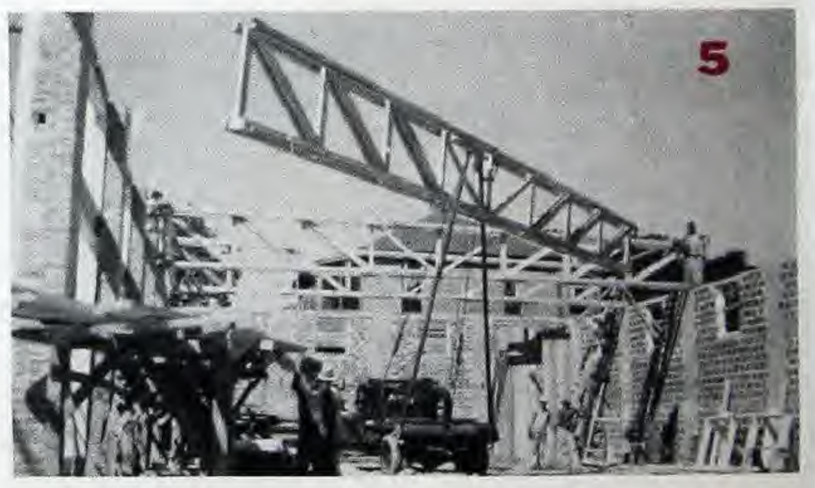
1. Ice Arena, Spokane, Wash., Trusses of 120′ span supported on 20″ timber columns.
2. Barrel storage rack, Shewan-Jones Winery, Lodi, Calif. Capacity 6264 barrels. All lumber prefabricated at Oregon sawmill and shipped ready-to-erect. Split rings used in joints.


3

3. Loading Shed, 100′ x 250′, Red River Lumber Company, Westwood, Calif. Flat top Pratt trusses—99′ C to C. Trusses spaced 14′ on centers on 10″ x 14″ timber columns. Height floor to lower chord 28′. Designed for 50 pounds per square foot snow load, 15 pounds per square foot dead load.
4. Warehouse, 100′ x 290′, Tampa Union Terminal, Tampa, Fla. Height floor to lower chord 20′, bays 20′.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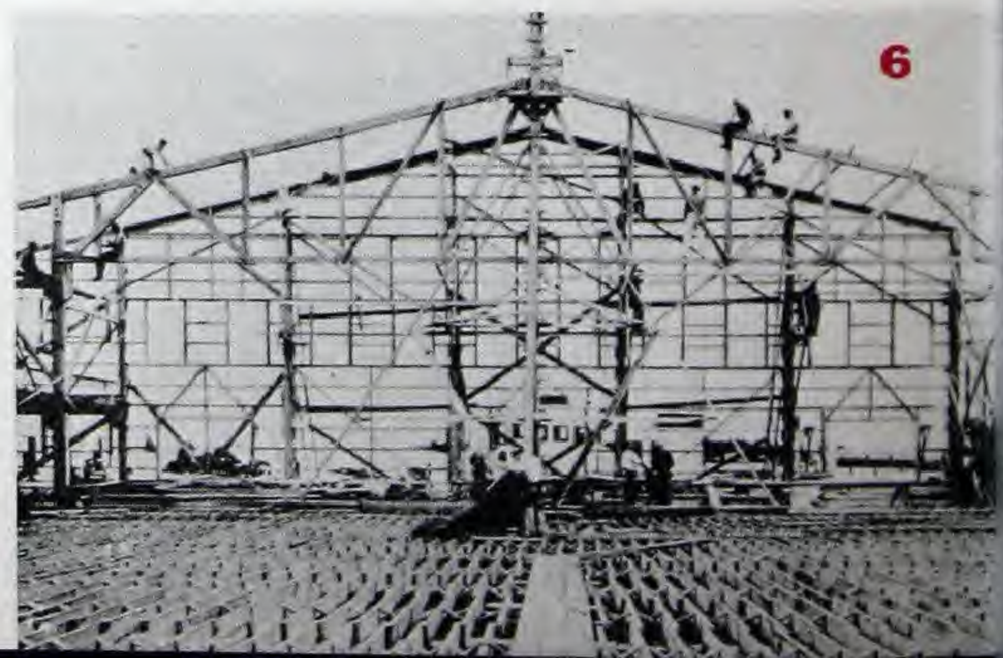
5. Rite-Way store building, Houston, Texas. Trusses 48′ span delivered to job assembled and erected in unit as shown.
6. Packing house, 77′ trusses center span, Fort Pierce, Fla. View shows floor system, end wall and one center truss in place.

4


6

INDUSTRIAL BUILDERS LIKE LOW-COST EFFICIENCY OF PREFABRICATED READY-TO-ERECT TIMBER FRAMING

1. Garage interior, Ben Milan Hotel, Houston, Texas. Prefabricated 43′ trusses assembled and delivered by truck to job ready-to-erect.

2. Warehouse trusses prefabricated and assembled at Houston, Texas, for out of town delivery by rail.

3. Fort Pierce packing house, Fort Pierce, Fla. Center truss 77′ span, on the right a lean-to truss 40′ 6″ span and on the left a mezzanine floor 25′ 6″ wide. Length entire building 228′. First 77′ truss took 2½ hours to place, the eleventh and last truss took only 11 minutes.

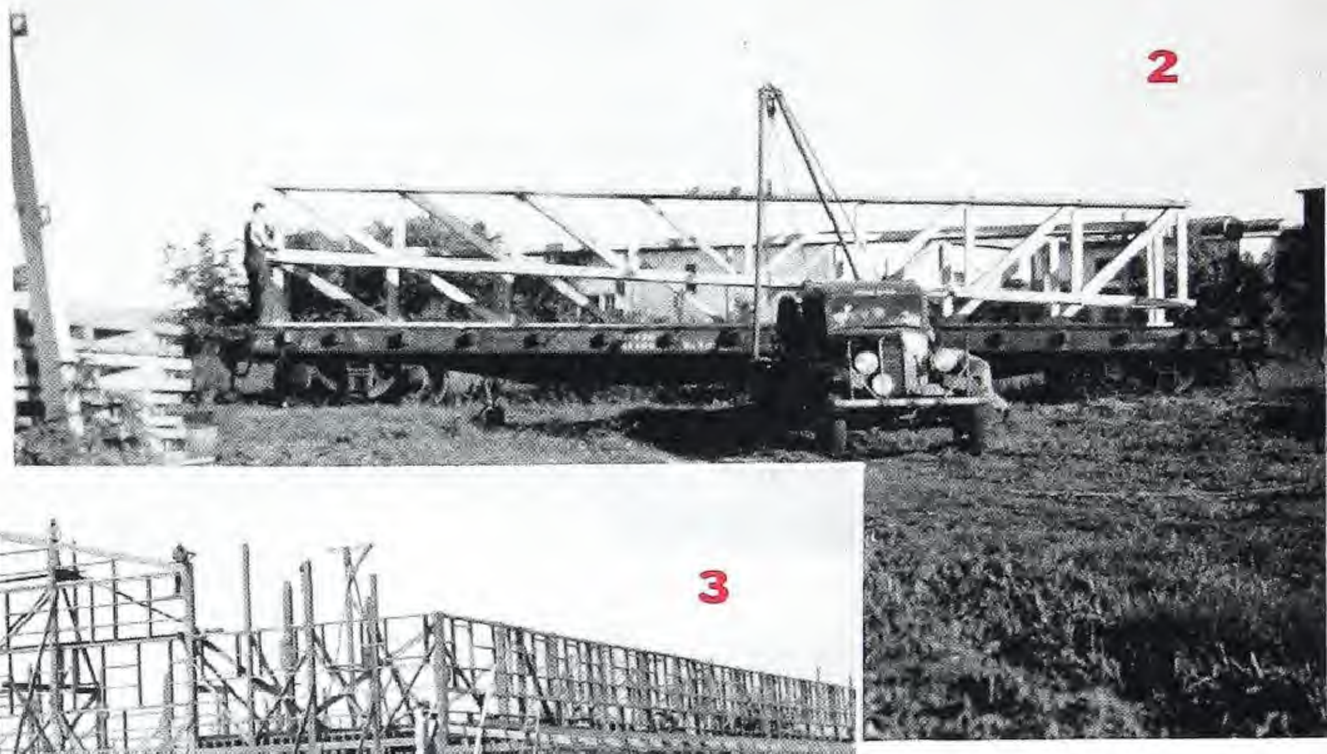
4. Robins, Sutter Basin, Calif. Fink trusses assembled on ground ready-to-erect as a unit. Experienced crews can erect timber-connector trusses rapidly.

5. Warehouse, Pacific Forest Industries, Tacoma, Wash. Lattice type 112′ trusses for 300′ warehouse. Much time saved by erecting as unit each truss with columns attached with a locomotive crane using a 5-point suspension.

6. Storage Shed, 94′ x 160′, Kalispell Lumber Co., Kalispell, Mont. Total floor area 15,000 sq. ft. Main center span 50′ with 25′ clearance, side spans 22′ with 14′ to 16′ clearance.

7. Prefabricated bowstring trusses, short spans for county garages, storage sheds, etc. Rock Island Lumber Co., Albert Lea, Minn.


1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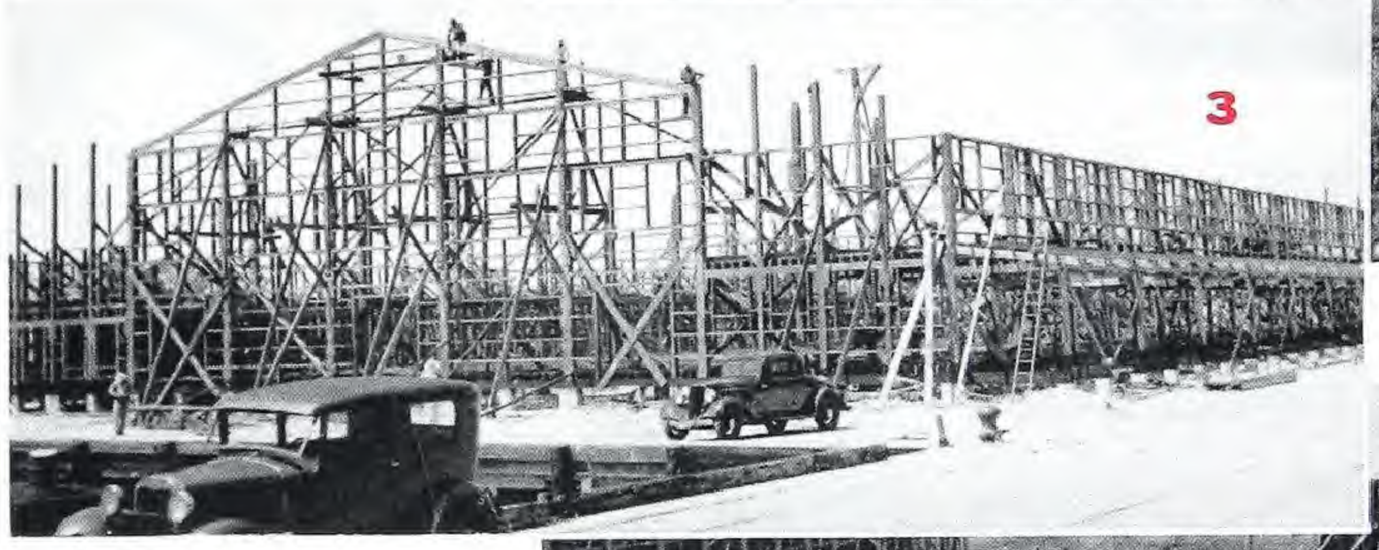
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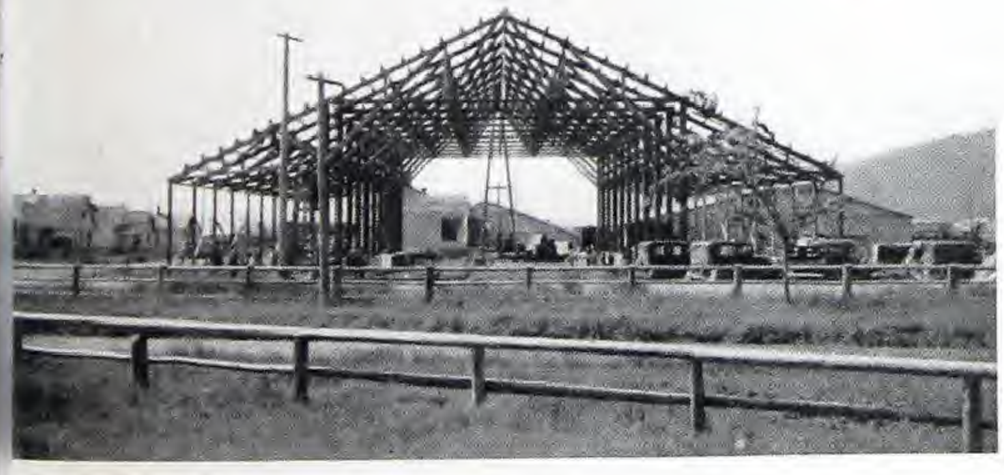
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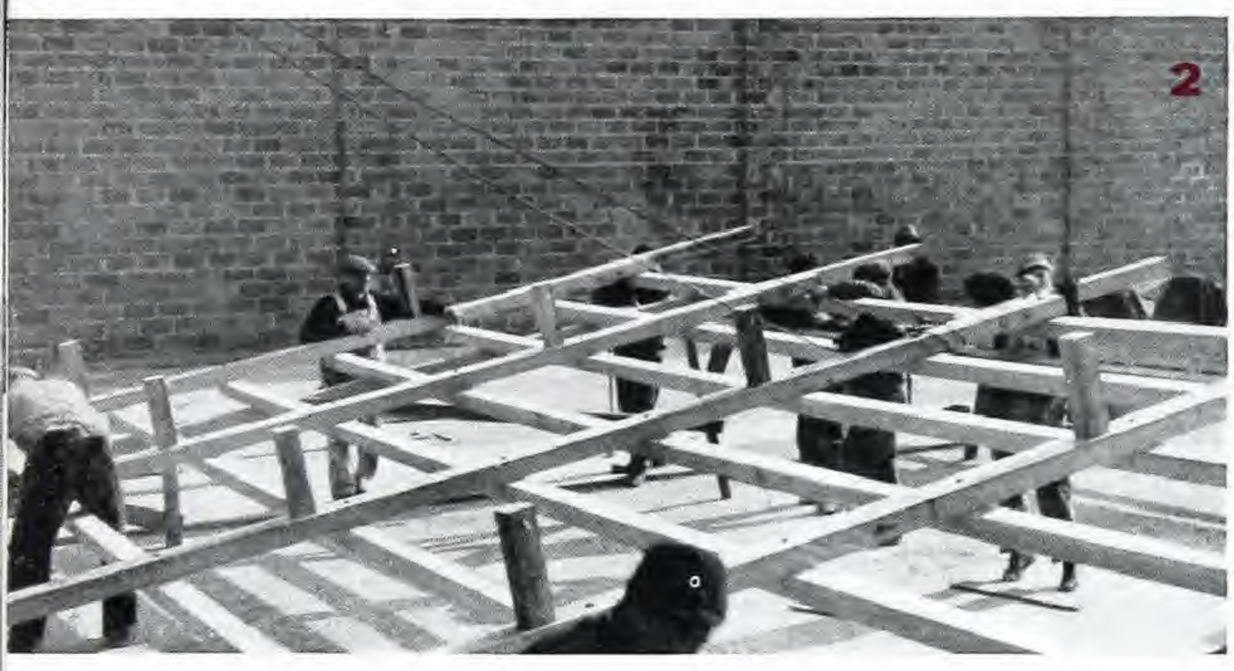
NEW CONNECTOR DESIGN FACTORS EXPAND RANGE OF INDUSTRIAL ASSEMBLIES NOW OPEN TO THE ECONOMY OF TIMBER CONSTRUCTION

1. Fire house roof trusses, Sayville, N. Y.



2. Distillery racks, Detroit, Mich. Workmen assembling section of a 15,000 barrel rack unit and making ready to hoist into position.

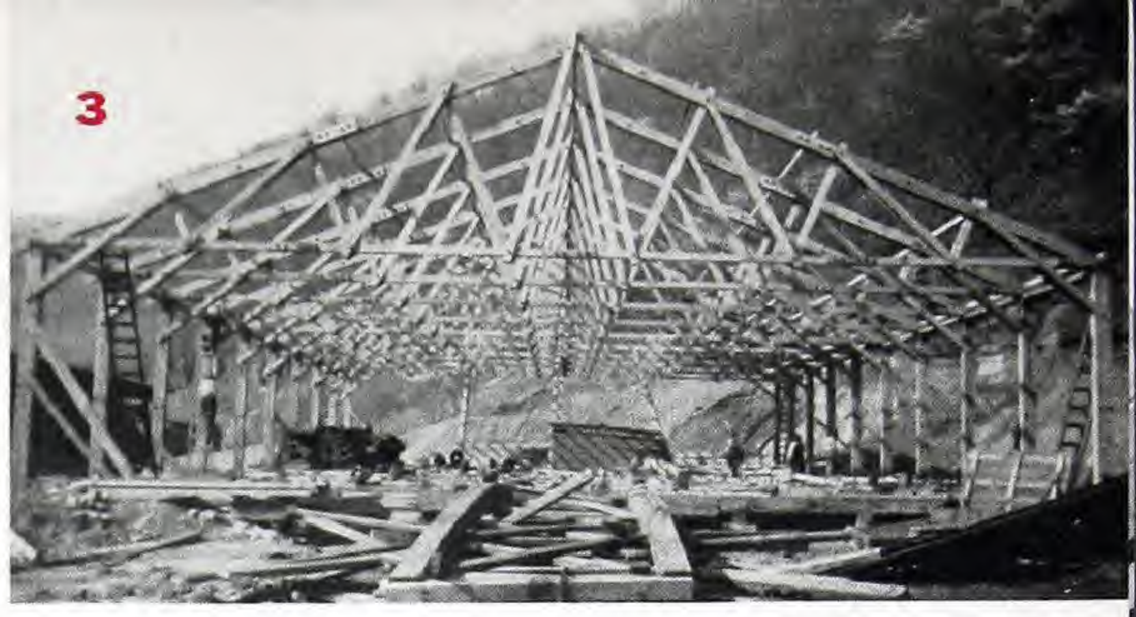
3 and 4. Bulkhead at pulp plant, Weyerhaeuser Timber Co., Everett, Wash. 1,500,000 board feet prefabricated lumber and piling used. Split rings used in bracing back side of bulkhead and connecting waling pieces.

5. Warehouse Terminal, Tampa, Fla. Showing assembled truss being swung into position.

6. Citrus Packing Plant, Florida Gold Citrus Corp., Lake Alfred, Fla. Two buildings erected. Size 46′ x 300′ and 117′ x 200′.

7. Farmers Market shed, 58′ x 200′, Starke, Fla. State Agricultural Marketing Board of Florida has adopted timber-connector trusses as standard.

SIMPLICITY OF CONNECTOR SYSTEM PERMITS REMODELING OR NEW CONSTRUCTION WITH LABOR ALREADY EMPLOYED IN INDUSTRIAL PLANTS



1. Planing mill, T. R. Miller Co., 80′ x 160′, Brewton, Ala. Trusses prefabricated, assembled and erected by company crew.

2. Storage shed, 90′ x 450′, Trexler Lumber Co., Allenton, Pa., Lumber Shed. Rebuilt with lumber salvaged from old sheds. Built with supervised common labor.

3 and 4. Planing mill, 70′ x 140′, Leatherwood Plant, W. M. Ritter Lumber Co., Walter, Ky. Clear spans make possible use of 100% of floor space, enabling more satisfactory arrangement of machinery and more economical handling of product.

5 and 6. Lou Lewis Food Market and Rite-Way Store, Houston, Texas. Examples of modernistic buildings that use timber trusses.

7. Agricultural building, Crockett, Texas. Typical of the low cost, easy to erect buildings using TECO system of construction.

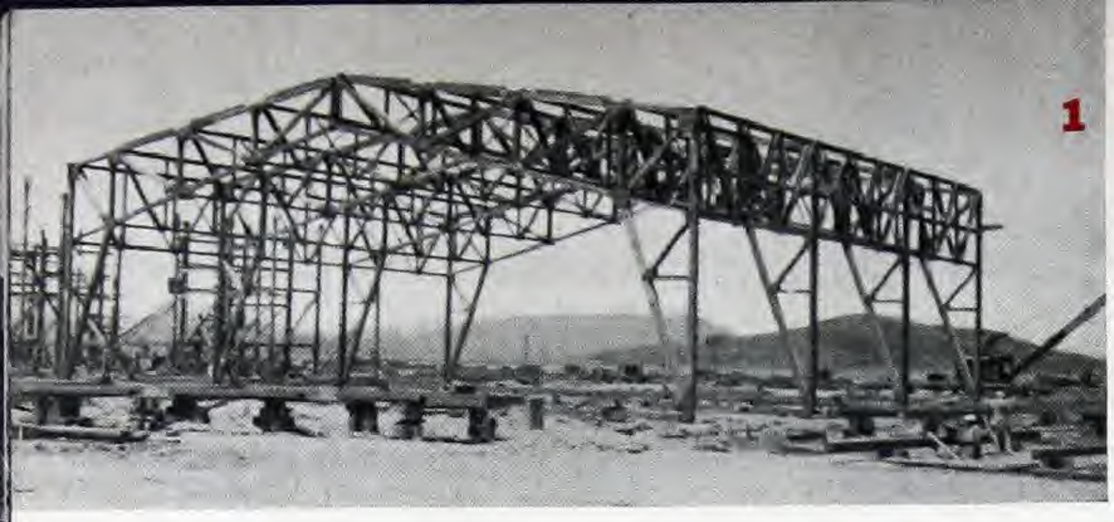
FEDERAL, STATE, AND MUNICIPAL ENGINEERS DESIGN NOVEL PRE-FABRICATED TIMBER STRUCTURES

1 and 5. North Court Building, Treasure Island, Golden Gate International Exposition, San Francisco, Calif. Mileposts in the progress of timber design have been set up in buildings of all types at exposition. Many buildings have clear arch spans of 200′. Over 27 million feet of timber construction have been used.

2, 3 and 4. Market sheds, Plant City, Fla. Three buildings, two of 98′ x 600′ and one 70′ x 600′, comprise the unit. Timber-connector trusses fabricated from standard designs.

6, 7 and 8. Federal Building, Golden Gate Exposition, San Francisco, Calif., Treasure Island. Resin bonded plywood 3″ thick gusset plates joined with split ring connectors to timbers for 100′ columns. Views show different stages in assembling the columns.

9. Migratory labor camps, California State Relief Administration, have used prefabricated timber trusses for camps throughout state. Buildings are completely panelized and prefabricated, often at a central plant 100 miles or more from camp sites.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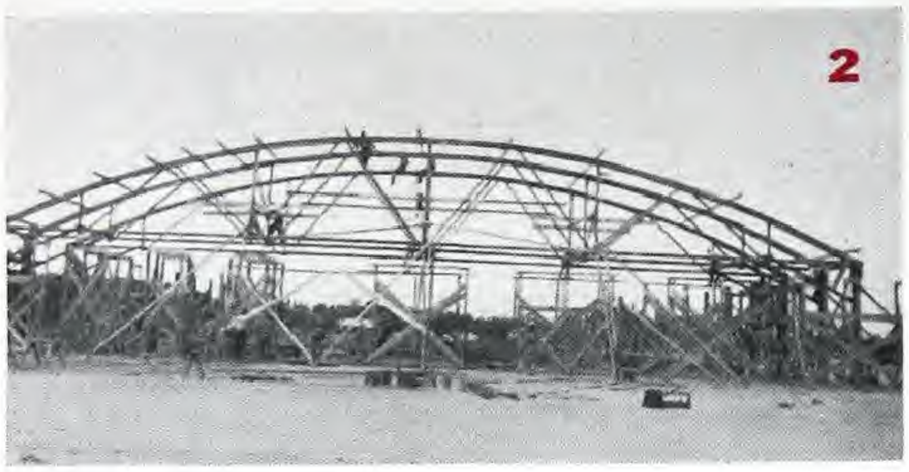
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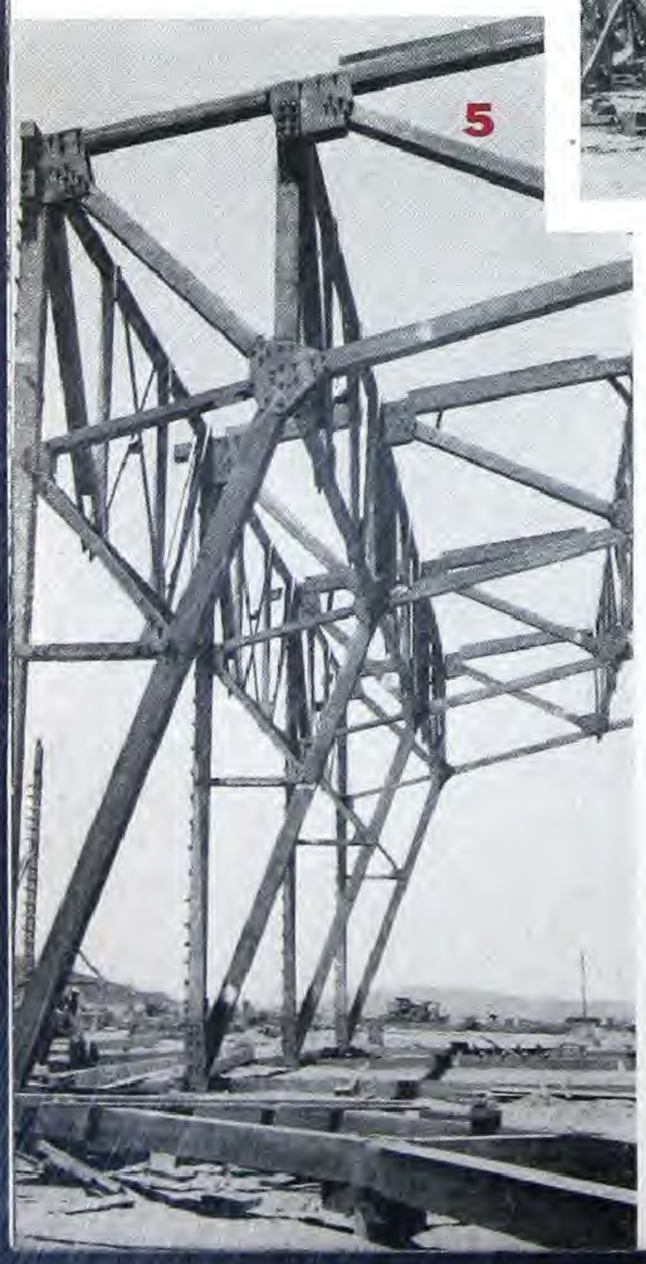
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1. County Garage, Hoffman, Minn. Short span timber-connector trusses are easily built by carpenters.

2 and 3. Low cost housing, Liberty Square, P.W.A. Housing Project, Miami, Fla. Three thousand 26' trussed rafters cut to specification at mill. Braces and splice plates cut at job site. Two carpenters and two laborers assembled 25 trusses per 8-hour day. Similar timber design accepted by U. S. Housing Authority.

4 and 5. South Tower—East Unit and Main Entrance or "Elephant" Towers, South Unit, Golden Gate Exposition, Treasure Island, San Francisco, Calif. Framing of tower 180' high and 64' wide in which a variety of connections are used. Structures combine efficiency of steel with economy of timber.

6. Trusses CCC Camp Bowling Field, Washington, D. C. Load test of prefabricated timber-connector trusses in barracks building CCC. Portable connector-built camps have shown superiority in strength and rigidity over ordinary construction in hurricane areas.


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7. State Relief Administration Camps for unemployed near San Francisco, Calif. Camp buildings panelized and prefabricated.

8 and 9. Portable low cost house for tenant farmers. Adapted from the basic design for barracks shown in illustration No. 9. The panel built portable house is prefabricated. Split ring connectors used in the roof truss construction. Over 150,000 CCC boys are housed in these strong, rigid buildings, as shown in No. 9. Buildings are demounted and moved to new sites as work progresses.

IN THE PAST FIVE YEARS ENGINEERS DESIGNED AND BUILT OVER 12,000 TIMBER STRUCTURES USING TIMBER-CONNECTOR SYSTEM - - - - -


1


2

1 and 2. Timber trestle in Yerba Buena Island Roadway from San Francisco-Oakland Bay bridge to Treasure Island, Golden Gate Exposition. Road is 64′ wide, one-half earth cut and one-half timber trestle. Design approved by U. S. Engineers.

3. Armory trusses, 80′ span, Dotham, Ala. Twelve Alabama armories used timber-connector trusses prefabricated at sawmill and sent to job sites ready-to-erect.

4 and 6. Transit shed trusses, Pier 48, San Francisco, Calif. Designed by State Harbor Department. Note assembled trusses on floor ready to be swung into position as unit.

5. Coffer dams, Bonneville Dam, Ore. Split rings employed in timber crib construction.


3


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7. State farmers market, 58′ x 400′, Bushnell, Fla. Note wide clear space for easy handling of produce unloaded on either side from farm trucks.

8. Agricultural Exhibit Building, 60′ x 120′, Crockett, Texas. Triangular eight panel Fink trusses showing trusses, purlins, rafters, and ceiling joists.


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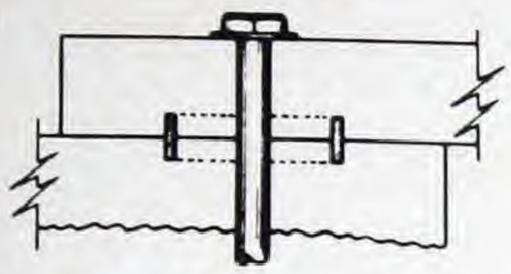
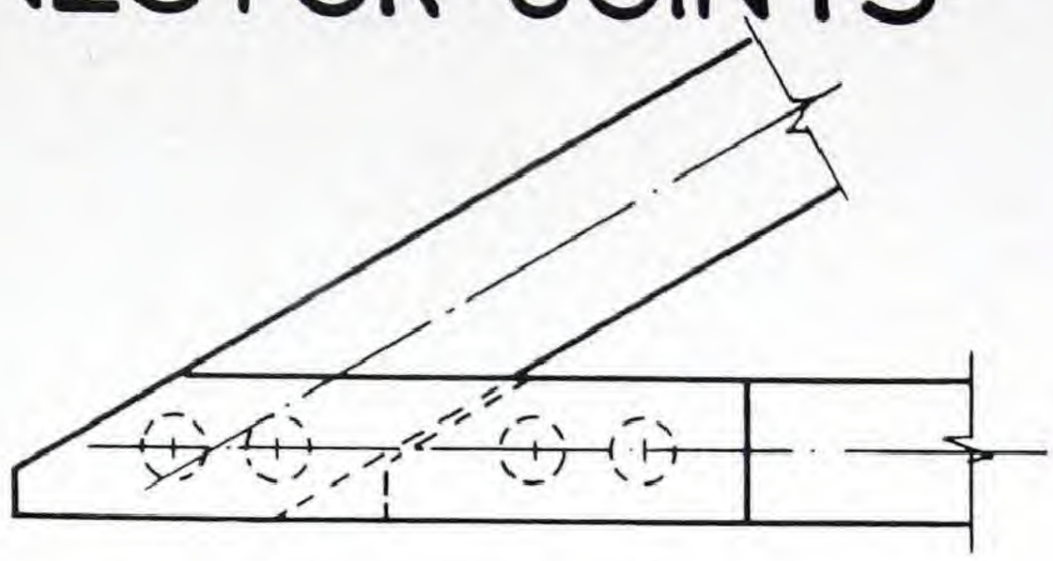
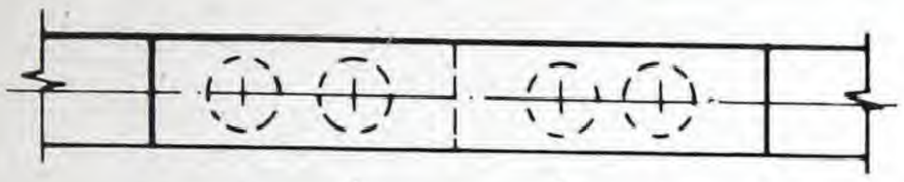
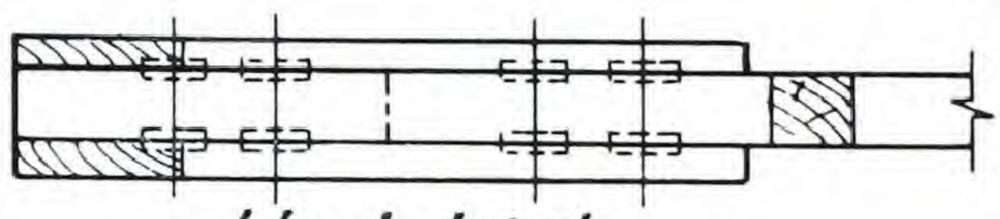
TYPICAL CONNECTOR JOINTS



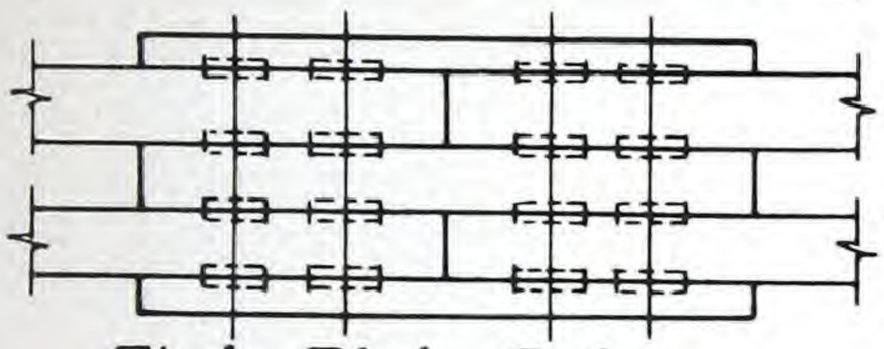
Split Ring Joint
Wood-to-Wood





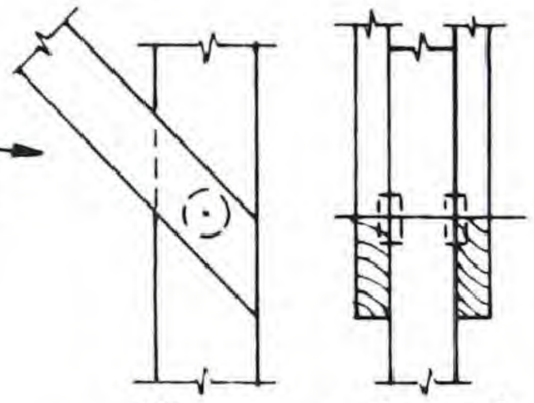


Heel Joint

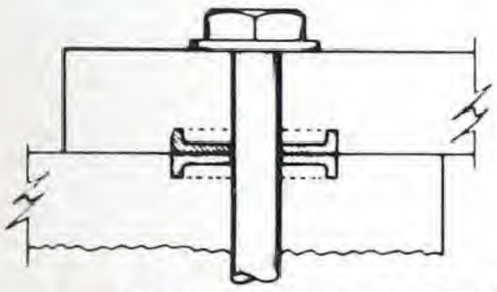


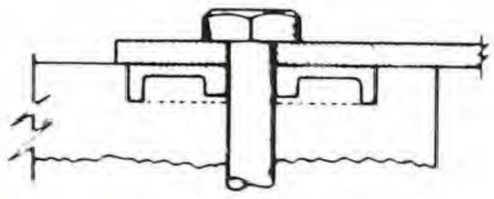
Fish Plate Splice

Split Rings
or
Toothed Rings

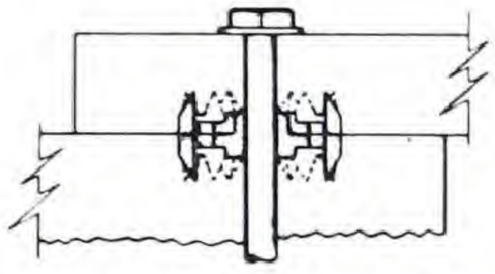


Brace Joint

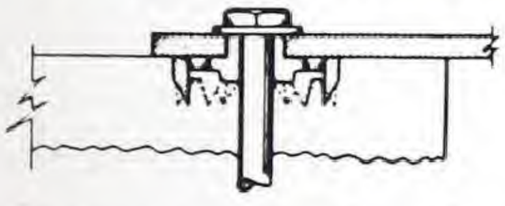




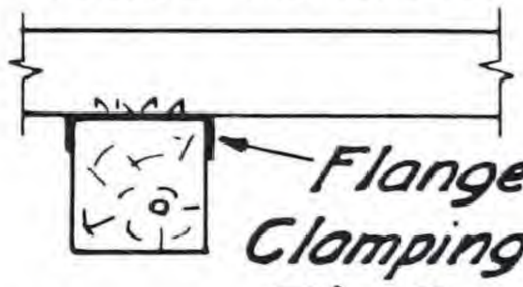
Flanged Shear Plate Joints
Wood-to-Wood Wood-to-Metal



Claw Plate Joint
Wood-to-Wood

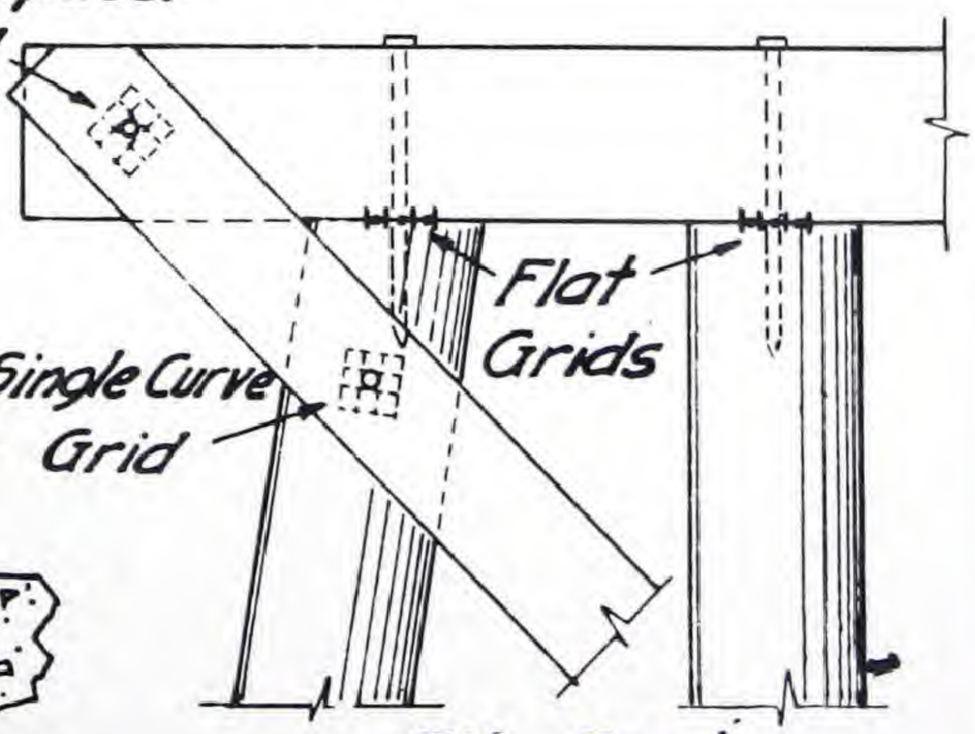


Claw Plate Joint
Wood-to-Metal



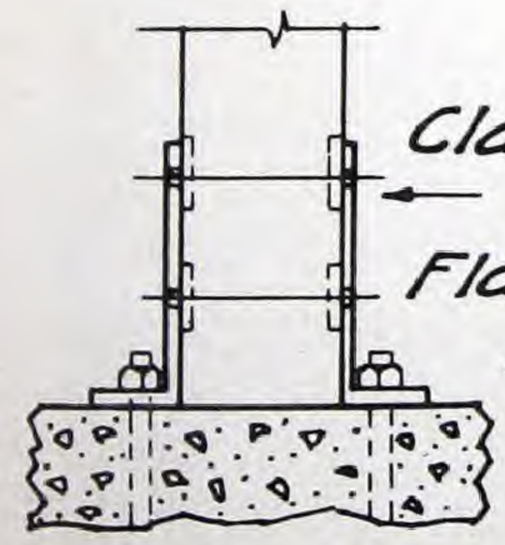
Flanged
Clamping Plate
Tie Spacer

Flat Grid



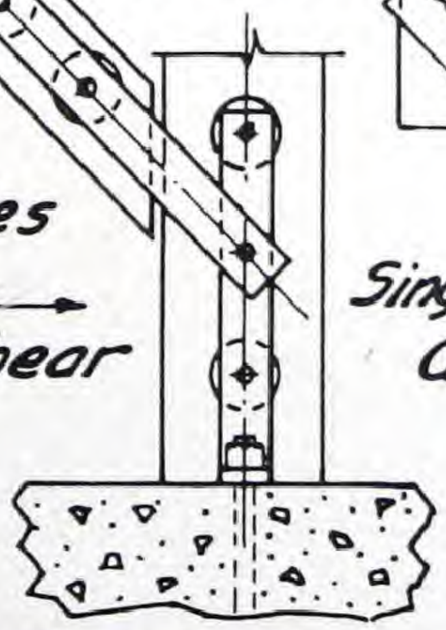
Flat
Grids

Single Curve
Grid



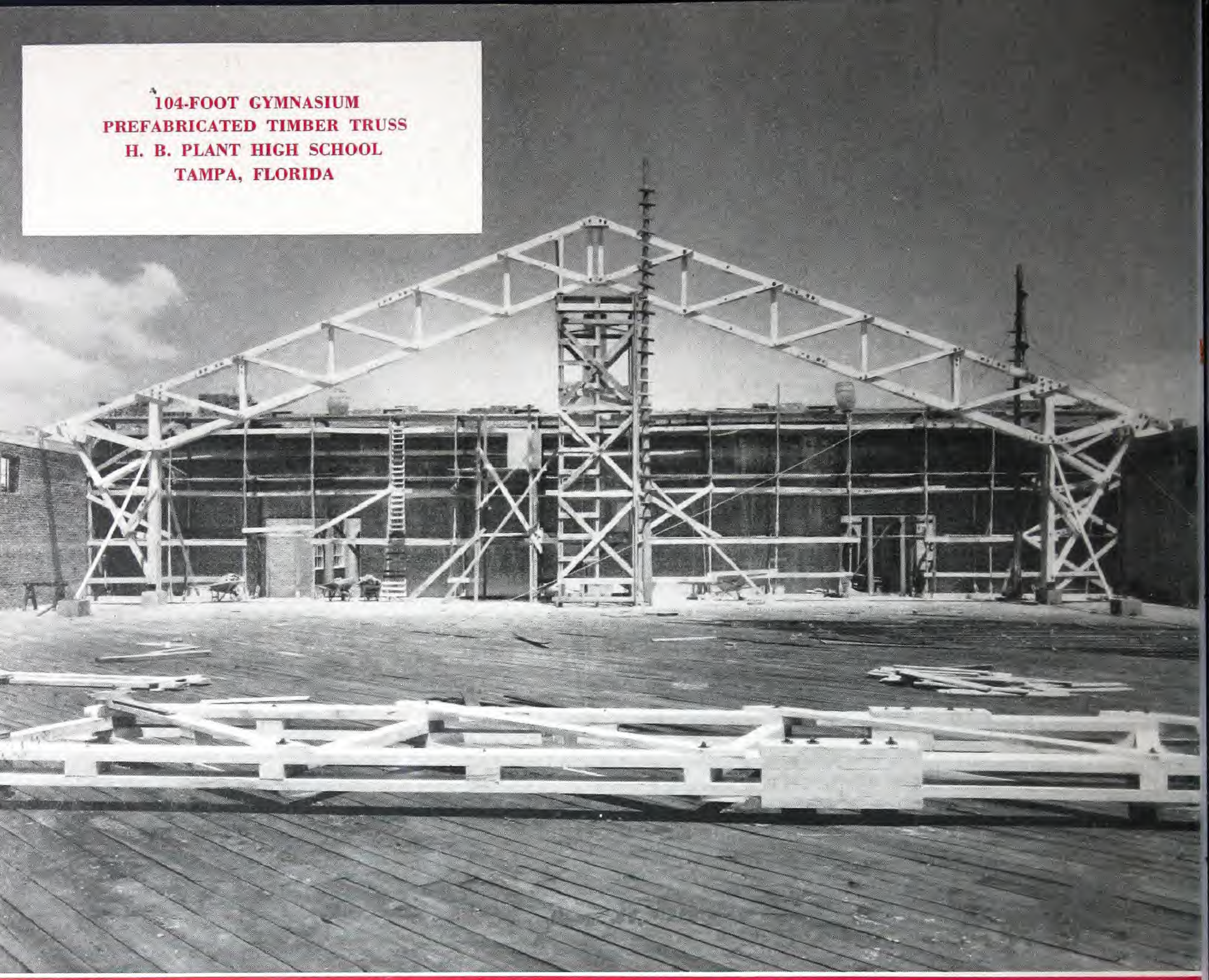
Claw Plates
or
Flanged Shear
Plates

Column Anchor



Tower Brace

Pile Bent



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Wood Structural Design Data is a 300-page book published by The National Lumber Manufacturers Association. It contains complete tables of safe loads for wood joists, beams and columns, covering the full range of commercial sizes, species and grades, and of the spans and heights ordinarily used. The book contains in addition much information on the grading of structural timber properties of sections, board feet per linear foot and other data useful to designers. Price $1.00 per copy.

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Supplement 2—Bolted Wood Joints—safe loads.
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Supplement 5—Wood Trusses—stress coefficients, length coefficients and angles.

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